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## No Great Curtailment.

### Rolling Mill Operations Little Changed.

### Less Activity in Pig Iron, with Indications of a Dragging Market.

The iron trade approaches the end of the half year, with none of the decisive indications in view that have been expected to develop when that point was reached. The expiration of many contracts with June has long been heralded, as though the industry would then enter upon a period of much curtailed operation. The fact is that in most lines the mills are fairly supplied with work for the summer, and the prospect is that there will be few shutdowns except those made for needed repairs or pending the adjustment of wages. The present scale of operations is from 10 to 15 per cent. less than in the first quarter of the year, and prices in a number of lines, particularly plates, structural steel, sheets and wire, have yielded as demand has fallen off, but the recession has not become any more marked in the past month.

The new orders booked by the United States Steel Corporation are still exceeding those of the corresponding period in May and the corporation is now operating 81 per cent. of its blast furnace capacity. In the past week one Riverside, one Gary and one South Chicago furnace have been blown out or ordered out, and one Edgar Thomson furnace has gone in, so that 30 furnaces are now idle, against 31 at the beginning of the month. The conditions in the wrought pipe trade are plainly indicated in the shutting down of the Riverside mills of the National Tube Company at Wheeling, with the connected steel plant, while both blast furnaces there are idle.

The sustained demand in the structural branch is still a feature in the finished steel trade. Bridge work has been an important factor this month, and the June total of fabricating contracts will probably exceed 150,000 tons, the best record for any month this year. The contracts of the week include 4500 tons for the Fort Smith bridge over the Arkansas, 4000 tons for the St. Paul bridge and 16,000 tons for the bridge at Montreal.

The Panama lock gate contract was awarded to the McClintic-Marshall Construction Company, and the bulk of the plates and other rolled steel, about 59,000 tons, will be furnished by the Jones & Laughlin Steel Company. Additional contracts for 10,000 tons of heavy sheared plates for pipe work were taken at Pittsburgh this week. Concessions on plates are more common. While 1.45c., Pittsburgh, is maintained on wide plates, 1.40c. has been done on narrow plates.

The wage demands of the sheet and tin plate workers, involving 10 per cent. advance, have been refused by the independent manufacturers and the two days' conference adjourned with no bright prospects for an early settlement. Black and galvanized sheets show

keener competition, and actual prices are \$2 to \$3 below the nominal.

The leading manufacturer of wire products is taking new business at the rate of 4500 tons a day, or about 15 per cent. less than the high rate for the year; yet the June total is expected to be the largest for that month in any year.

Sales of 4 x 4-in. billets at \$25, Pittsburgh, are now openly reported, while smaller billets have sold at \$25.50.

Pig iron is drifting into dullness. The few sales made accentuate the weakness of recent weeks and point to a dragging market for some time to come. Production is still excessive, and another blowing out movement is plainly in order.

Several sales of basic iron have been made in Eastern markets and it is believed \$15.75, delivered in eastern Pennsylvania, could be shaded. Low points on foundry and forge iron in the Central West were touched in purchases by one large interest.

The lake ore movement is heavy, but the capacity of the fleet is greater than the movement, and 20 per cent. of the merchant vessels will tie up for a month.

There has been good buying of copper—about 20,000,000 lb.—much of the business being done at 12 $\frac{3}{4}$ ¢ and 12 $\frac{1}{2}$ ¢ for electrolytic.

## No Iron Ore Famine

Prof. Henry M. Howe contributes to the *Atlantic Monthly* for June an article entitled "An Optimist's View of the Iron Ore Supply." He disregards the quantitative treatment of the subject that has been so common, based on explorations in various countries and on estimates of the probable ultimate yield of known deposits. He also passes by the fact that pyrite, one of the richest and most abundant ores is not included in any current estimates. While such considerations and the fact that only a small part of the earth's crust has been explored for ore are important as increasing from decades to centuries the expected life of our iron ore supplies, the author says the really important fact is that there is an incalculable quantity of material which, though not ore to-day, will become ore as soon as it is needed. Two extracts will indicate Professor Howe's viewpoint:

What is iron ore? At any given time it is simply rock rich enough, in large enough masses and near enough to the surface, to be treated with profit in competition with the other iron bearing rocks which man is then working. Rock with 2.5 per cent. of gold is an extraordinarily rich gold ore; rock with 2.5 per cent. of copper is copper ore to-day; rock with 2.5 per cent. of iron is not iron ore to-day, for the sole reason that it cannot be worked at a profit in competition with existing richer rocks. It will become ore just as soon as the exhaustion of the richer rocks shall have enabled its owners to treat it with profit. Whether a given ferruginous rock is or is not ore, then, is purely a question of existing demand and supply. Most iron ores mined to-day contain at least 25 per cent. of iron, and some contain more than 60 per cent. As these richer ores are exhausted, poorer and poorer ones will come into use, until, to the eye of the prophet, a large bed of 4 per cent. ore, perhaps even of 2.5 per cent. ore, becomes a veritable bonanza. \* \* \*

The whole crust of the earth is ours. We will first take the richest ores, those in the largest masses, and those nearest the surface; in short, the most profitable ores; but we shall later take poorer and deeper ones. To this process there is hardly a limit. Thus it is not a real iron famine that awaits us, but only the need of mining at greater depths and of handling more tons of ore and barren rock for each ton of metallic iron ready for man's use. This handling will in general have to include crushing the ore and separating by mechanical process its scattered particles of minerals rich in iron from the great mass of barren minerals with which they are usually mixed.

It must be confessed that the views commonly taken

of the problem of iron ore supply have been greatly lacking in perspective. Professor Törnebohm's report to the Swedish Government a few years ago, that became the basis for that country's niggardly policy of iron ore export, put the world supply of ore such as is now commonly shipped at 10,000,000,000 tons. He predicted that 50 years would see most of it used up. And that prediction seemed not unreasonable if the United States had only about 1,100,000,000 tons, as Professor Törnebohm allowed. We have been dealing in figures, as though we had before us a definitely calculable mass of ore, whereas the conditions of the problem are such that mathematical calculations furnish no solution. Professor Howe asks us to consider that we are but a few centuries past the historic period, while before us lie untold millions of years during which the world may remain inhabitable; also that the mechanical powers of our successors will exceed ours a thousand-fold more than ours exceed those of the cave dwellers. He conceives of the earth as a huge iron meteor, and that, while this generation is taking out a fraction of the iron of the thin crust of rocks, the men of the future will pierce the crust and draw their supply from the iron core.

Passing from this somewhat fanciful treatment of the subject, that would scarcely be considered enlightening to a congressional committee charged with tariff revision, the article brings out an important point that has been little considered in the discussion of this subject. We have heretofore called attention to the vast stores of steel accumulating in iron using countries, much of which will go back in bulk to the melting furnace, reducing the theoretical consumption of ore by much more than would be calculated from the present rate of scrap use, since we are only in the beginning of the age of steel. Professor Howe makes much of the wearing of iron into dust or rust, which, though it disappears from sight, is not destroyed, but is ever accumulating. "From this point of view," he says, "it is indeed possible that, even before we shall have used up the accessible iron in the earth's crust, these reconcentrations will form rapidly enough to supply with iron a population greater than that which the growth of vegetation can support."

Without going at length into Professor Howe's interesting argument we commend it as an antidote for the "after-us-the-deluge" treatment of the question of iron ore supply that has been quite too common. At the same time, it must be admitted that it does not answer every question of the Central Western blast furnaceman who finds no iron mine for sale, and in a year like 1910 is paying \$5 a ton for Lake ore, and selling pig iron at a price just giving him back a new dollar for an old one.

## The Morals of Corporations

It is an interesting fact in modern commercial life that the corporation is following in practice a higher standard of morals than the individual. It has not by any means attained the ideal in this respect, but there is no doubt that in its relations with the public and its employees, as well as in its internal affairs, the average corporation is in advance of the average individual in the practice of fair commercial dealing.

It is unfortunate that this fact cannot be under-



stood by the general public. Its appreciation would moderate the demand for legislation, which has a tendency to oppress industry and commerce. Such appreciation would act as a check on the spirit of class hatred, which is fomented by agitators; it would also discourage unscrupulous strike leaders who seek to extort money from the unpopular corporation. There is a great need for wholesome discrimination between the large number of law abiding corporations and the few whose practices have put them under the public ban.

In the first flush of their power, American corporations were undoubtedly reckless and greedy in the exercise of their privileges. This was particularly true of the railroad corporations of 40 years ago. Their charters were created by special acts of legislatures, which were often personally profitable to the statesman of that period. The difference between the proceeds of securities sold and the actual cost of construction represented enormous profits to the promoters of railroads. Legislative privileges were cheap, and not infrequently a Legislature passed under the suzerainty or control of the leading railroad in its State. This period of corporate activity, however, has passed away.

Manufacturing, mercantile and banking corporations, organized under general laws, are of more recent origin, and they have been remarkably free from speculative management. The men who conducted them soon discovered that good will is a valuable asset, which can only be the product of conservative and honorable management. The individual who is engaged in a horse trade makes the most of one opportunity, and this is also true in real estate transactions, and frequently in the management of estates. The individual, in these occasional transactions in private life, does not feel bound by any moral code of restraint which would bar him from turning a "profit." An unfortunately large number of people are led to believe, by their observation of such transactions, that all commercial undertakings are conducted in the same manner, and if they engage in business many of them never learn otherwise.

Commerce has an irresistible tendency to purge itself of unfair dealing. The farmer who thinks he can acquire wealth as a merchant because he has been successful in cheating other people in horse trades usually fails in business unless he learns that fair dealing is the first essential in any established mercantile enterprise. The manufacturer learns that he must deal fairly to obtain the good-will of his possible customers and thus build up his business, and the banker who would obtain a large commercial patronage must forget the methods of the small loan shark. The corporation engaged in any legitimate business is subject to even greater pressure than the individual manufacturer, merchant or banker. The life of a corporation is practically perpetual. It may be destroyed by reckless management, but under careful, fair direction its property becomes more valuable each year, through the slow accretion of "good-will." It must be fair to its employees, or those whose experience or skill makes them valuable will go elsewhere; and for the same reason it must be fair to its customers.

The individual may be unscrupulous or harsh in his dealings, but so long as he avoids a few flagrantly criminal acts the law does not molest him. The corporation, however, is always a popular target for a

damage suit, and is assessed by juries in a hundred doubtful cases where the man would escape. The man cannot be required to testify against himself in a criminal proceeding. The United States Supreme Court, however, has laid down the rule that a corporation is not entitled to this privilege of the citizen, but must produce its books and records, even though they may convict it of a criminal act.

A generation ago men who were directing certain large corporate interests assumed that they had the right to be as shrewd and aggressive, and perhaps as unscrupulous, in directing their corporate affairs, as many individuals were, who but kept within the letter of the law. They did not foresee that the public would demand a higher standard of morals in the conduct of great corporations than actually prevails in dealings between man and man. With few exceptions, the corporations of the twentieth century have learned that while the written acts of legislation may sometimes be evaded, the great unwritten law of commerce must be obeyed, which decrees that men shall deal fairly with one another. And as these corporations have grown greater and the circle of their stockholders has widened their standards have come nearer to those of the collective conscience. Publicity has been the spur under which much of this advance has been made. Unwelcome as much of it has been, it is the best guaranty of the permanence of great corporations, and of the high standard the people have set up for their conduct.

### The Cancellation of Machine Tool Contracts

A vast amount of interest has been created by the group of thoughtful papers on the cancellation of machinery contracts presented at the recent meeting of the National Machine Tool Builders' Association. It has long been a source of wonder, both in and out of the trade, that the customer of the machine tool manufacturer is given the privilege of rescinding all orders, excepting where a machine or its equipment is of a special nature. The builder, in his own buying, is compelled to live up to practically all of his contracts. A recent typical example is that of a machinery house which bought a motor truck of a customer. Part cash payment was required before the order was booked, yet the builder of the truck would feel at liberty to cancel any order for machinery placed with this concern, because such is the custom in the latter's trade. No matter what the machine builder orders he expects to take it and pay for it.

Doubt is expressed of the practicability of creating a system of unbreakable machinery contracts, but none of the difficulties advanced is insurmountable. What is needed is concerted action in the trade. The influence of the Machine Tool Builders' and the Supply and Machinery Dealers' Associations, properly applied, could not be resisted successfully by those whom their members serve. The discussion of the subject in recent years has accentuated too sharply the difficulties between manufacturers and dealers as to stock orders. The real question has to do with the consumer only. If the latter were held to his contract, as a buyer of pig iron is held to his, the question of stock orders would take care of itself. As was pointed out by the authors of the papers at Rochester, the machinery buyer in placing orders often deliberately takes into account the fact that if he does not want the tools

when the date of delivery approaches he has but to cancel. If all business were conducted on such a basis chaos would prevail; and the absurdity of so important a trade continuing to tolerate such unbusinesslike practices is apparent to all. The matter is worthy of the strongest effort, and the time to act is when business is good and customers are demanding early deliveries. To-day they could not afford to refuse the terms of an ironclad contract, presuming that the trade acted unitedly.

The lesson of 1907 was a costly one. Millions of dollars in machinery contracts were cancelled within a few weeks. The presence of this business on the books of the manufacturers had stood in the way of other orders, a certain percentage of which would have been carried through. The existence of a non-cancellation contract at that time would have saved enormous sums of money for the industry. Its customers would then have shared some of the heavy burdens which it was compelled to bear unassisted.

### The Motor Car and Machine Tool Design

Robert Pierpont, works manager of the Olds Motor Works, said in the course of his paper before the National Machine Tool Builders' Association at Rochester, N. Y., in which he argued for a simplification of machine tool design:

A number of the tool builders, when they sell a machine or a number of them, send out a demonstrator or a man to instruct the manufacturer how to use it properly to obtain the best results. Some of you keep men on the road all the time, going from place to place to see that your machines are used as they should be. The point I wish to make is this: Are any of you sending your designers around to see what they can learn from the actual conditions existing in the automobile factories? If not, why not? Let them visit and talk with the heads of departments, the general foremen and superintendents of a number of the automobile factories where your machine tools are used. You will then find whether your machine is the best for the work that you can make it or not; also whether you could not make it cheaper and have it answer the purpose just as well. If you will do this you will find out more about what is required than you ever can by getting some one like myself to tell you how little he knows about machine tools.

The statement is full of suggestion. In the discussion accompanying the paper it was brought out that the machinery builders have not found it easy to follow the plan. The men of the automobile factories with whom the designers would have to get in touch in order to procure the necessary details of information are, in a great majority of cases, inaccessible. They are very busy, and even if they were willing to put their time against that of the machine designer they would find difficulty in doing so, because of the press of other duties. The visitor must see the practical men, those who superintend the manufacturing processes, else the tour of inspection and study would prove of small value to either industry.

The matter is not, however, one to be dropped because of obstacles which have interfered in the past. The automobile manufacturer is a greater gainer than the machine tool builder from the development of tools adapted especially to his wants, in accomplishing a minimum cost for equipment and production. Therefore he could well afford to court the investigation advocated by Mr. Pierpont. He should make the reception of designers from the machine shops an important duty of his superintendents and foremen. He might concentrate their energies by inviting the engineers of representative groups of machinery houses to meet in

his works at the same time. One suggestion is that the automobile and machine tool industries create a joint committee to study questions of mutual interest, including design; but naturally this would accomplish no more than general results. The machinery builder gets many good ideas from his demonstrators, some of whom are trained engineers, amply able to study intelligently equipment in its relation to individual works. What is needed, apparently, is a comprehensive system of co-operation between the two trades, that each may profit by the assistance of the other in developing the most highly efficient and economical manufacturing equipment for the purposes of that enormous buyer of machinery, the automobile industry.

### Extensive New Works of B. F. Avery & Sons, Inc.

B. F. Avery & Sons, Inc., Louisville, Ky., has completed the construction of its extensive new works and is now installing the machinery and equipment. It is expected that the plant will be in full operation by August 1. There are 11 main brick, steel and concrete buildings, comprising one of the most modern and best equipped, as well as one of the largest factories in the country for the manufacture of plows and cultivating implements. All of the manufacturing buildings are of fireproof construction, and with one exception are one story high. The plant covers a tract of 35 acres and is favorably situated for handling inbound and outbound traffic as well as for the progress of materials and goods through the factory. The buildings consist of a power house 50 x 100 ft., equipped with three Stirling water tube boilers, with a total capacity of 900 hp. and a 600-hp. high-speed engine direct connected to a 400-kw. alternating current generator, from which all power is transmitted to individual motors used for operation of machinery; an office building 65 x 160 ft., three stories and basement; pattern house 65 x 100 ft., two stories; foundry, 100 x 225 ft., equipped with two cupolas, and including a core room 30 x 100 ft.; coke shed, 25 x 160 ft.; milling department, 50 x 100 ft.; hardware storeroom, 100 x 120 ft.; a shear shop, one story, 100 x 200 ft.; forge shop, 100 x 250 ft.; machine shop, 50 x 100 ft.; a building, 80 x 325 ft., used as a cultivator shop; a building, 80 x 325 ft., for fitting, grinding and polishing departments; a paint shop, 80 x 350 ft., two stories; warehouse, 125 x 400 ft., with a capacity of 750 carloads of goods; sawmill, 50 x 100 ft.

### Thirty-one Gary Gas Engines and 150,000 Hp.—

The Allis-Chalmers Company has just secured from the United States Steel Corporation additional orders for six gas engine driven electrical units, which will increase the power plant at Gary, Ind., 25 per cent. The 25 engines which the Allis-Chalmers Company has installed at Gary and the order just secured will make a total of 31 gas engines with a combined capacity of 150,000 hp., making the largest power plant of its kind in the world. These units will operate on blast furnace gas. The Allis-Chalmers Company has also secured from the American Steel & Wire Company an order for two large gas engines for Central Furnaces at Cleveland, Ohio, of the same capacity as the engines for the Gary plant.

The Electrical Alloy Company, Morristown, N. J., has recently made extensions to its plant and installed a number of fine wire and heavy wire continuous machines; also insulating machines. The company's products are high-grade resistance materials, including phosphor bronze, nickel, tinned steel, armature banding, aluminum, brass, bronze and German silver wires.



# The Iron and Metal Markets

## Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Structural Shapes.**—I-beams and channels, 3 to 15 in., inclusive, 1.45c. to 1.50c., net; I-beams over 15 in., 1.60c., net; H-beams over 8 in., 1.70c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.55c., net; angles over 6 in., 1.60c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.70c., base, half extras, steel bar card; tees, 3 in. and up, 1.60c., net; tees, 3 in. and up, 1.55c., net; angles, channels and tees, under 3 in., 1.45c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.80c., net; hand rail tees, 2.80c., net; checkered and corrugated plates, 2.80c., net.

**Plates.**—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.45c. to 1.50c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge.....	\$0.10
Gauges under 3-16-in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
Gauges under No. 9 to and including No. 10.....	.30
Gauges under No. 10 to and including No. 12.....	.40
Sketches (including all straight taper plates), 3 ft. and over in length.....	.10
Complete circles, 3 ft. diameter and over.....	.20
Boiler and flange steel.....	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Still bottom steel.....	.30
Marine steel.....	.40
Locomotive firebox steel.....	.50
Widths over 100 in. up to 110 in., inclusive.....	.05
Widths over 110 in. up to 115 in., inclusive.....	.10
Widths over 115 in. up to 120 in., inclusive.....	.15
Widths over 120 in. up to 125 in., inclusive.....	.25
Widths over 125 in. up to 130 in., inclusive.....	.50
Widths over 130 in.....	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive.....	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive.....	.50
Cutting to lengths or diameters under 1 ft.....	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

**Sheets.**—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Black annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 1.95c. Box annealed sheets, Nos. 17 and 21, 2.20c.; Nos. 22 to 24, 2.25c.; Nos. 25 and 26, 2.30c.; No. 27, 2.35c.; No. 28, 2.40c.; No. 29, 2.45c.; No. 30, 2.55c. Galvanized sheets, Nos. 13 and 14, 2.50c.; Nos. 15 and 16, 2.60c.; Nos. 17 to 21, 2.75c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3.10c.; No. 27, 3.30c.; No. 28, 3.50c.; No. 29, 3.60c.; No. 30, 3.85c. Painted roofing sheets, No. 28, \$1.70 per square. Galvanized roofing sheets, No. 28, \$3 per square, for 2½-in. corrugations.

**Wrought Pipe.**—The following are the discounts on the Pittsburgh basing card on carloads of wrought pipe now in effect:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
¼ and ½ in.....	70	54	66	53
¾ in.....	71	57	67	53
1 in.....	74	62	70	58
1 1/8 to 6 in.....	78	68	74	64
7 to 12 in.....	72	57	68	53
Plugged and Reamed.				
1 to 4 in.....	70	66	72	62
Extra Strong, Plain Ends.				
¼ to ¾ in.....	63	51	59	47
1 to 4 in.....	70	58	66	54
4 1/2 to 8 in.....	66	54	62	50
9, 10, 11 and 12 in.....	54	42	..	..
Double Extra Strong, Plain Ends.				
½ to 8 in.....	59	48	55	44

The above steel pipe discounts are for "card weight," subject to the usual variation of 5 per cent.

**Boiler Tubes.**—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1¼ in.....	49	43
1½ to 2¼ in.....	61	43
2½ in.....	63	48
2½ to 5 in.....	69	55
6 to 13 in.....	61	43
2½ in. and smaller, over 18 ft., 10 per cent. net extra.		
2½ in. and larger, over 22 ft., 10 per cent. net extra.		

Less than carloads to destinations east of the Mississippi River will be sold at delivered discount for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

**Wire Rods.**—Bessemer, open hearth and chain rods, \$31.

**Steel Rivets.**—Structural rivets, ¼-in. and larger, 2.15c., base; cone head boiler rivets, ¼-in. and larger, 2.25c., base; ¾-in. and 11-16-in. take an advance of 15c., and ½-in. and 9-16-in. take an advance of 50c.; in lengths shorter than 1-in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill. The above prices are absolutely minimum on contracts for large lots, makers charging the usual advances of \$2 to \$3 a ton to the small trade.

## A Comparison of Prices

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	June 22, 1910.	June 15, 1910.	May 25, 1910.	June 23, 1909.
<b>PIGIRON, Per Gross Ton:</b>				
Foundry No. 2, standard, Philadelphia.....	\$16.50	\$16.75	\$17.00	\$16.50
Foundry No. 2, Southern, Cincinnati.....	14.75	15.00	14.75	14.75
Foundry No. 2, local, Chicago.....	16.75	16.75	17.00	16.50
Basic, delivered, eastern Pa.....	16.00	16.25	16.25	15.50
Basic, Valley furnace.....	14.50	14.75	15.00	15.00
Bessemer, Pittsburgh.....	16.40	16.65	16.90	16.15
Gray forge, Pittsburgh.....	14.90	15.15	15.90	14.90
Lake Superior charcoal, Chicago.....	18.50	18.50	18.50	19.50

<b>BILLETS, &amp;c., Per Gross Ton:</b>				
Bessemer billets, Pittsburgh.....	25.00	25.50	25.50	23.00
Forging billets, Pittsburgh.....	31.00	31.00	31.00	26.00
Open hearth billets, Philadelphia.....	28.50	28.50	29.00	25.00
Wire rods, Pittsburgh.....	31.00	31.00	32.00	29.00
Steel rails, heavy, at mill.....	28.00	28.00	28.00	28.00

<b>OLD MATERIAL, Per Gross Ton:</b>				
Steel rails, melting, Chicago.....	14.00	14.00	15.00	14.50
Steel rails, melting, Philadelphia.....	14.50	14.50	14.50	16.00
Iron rails, Chicago.....	17.00	17.00	17.50	17.00
Iron rails, Philadelphia.....	18.50	20.00	20.00	19.50
Car wheels, Chicago.....	15.50	15.50	15.50	16.00
Car wheels, Philadelphia.....	15.00	15.00	15.00	15.00
Heavy steel scrap, Pittsburgh.....	15.00	15.25	15.25	15.75
Heavy steel scrap, Chicago.....	13.00	13.00	13.50	14.50
Heavy steel scrap, Philadelphia.....	14.50	14.50	14.50	16.00

## FINISHED IRON AND STEEL.

	Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia.....	1.47½	1.47½	1.52½	1.45	
Common iron bars, Chicago.....	1.45	1.47½	1.47½	1.35	
Common iron bars, Pittsburgh.....	1.50	1.50	1.55	1.40	
Steel bars, tidewater, New York.....	1.61	1.61	1.61	1.36	
Steel bars, Pittsburgh.....	1.45	1.45	1.45	1.20	
Tank plates, tidewater, New York.....	1.61	1.60	1.60	1.41	
Tank plates, Pittsburgh.....	1.45	1.50	1.50	1.25	
Beams, tidewater, New York.....	1.61	1.66	1.66	1.41	
Beams, Pittsburgh.....	1.45	1.50	1.50	1.25	
Angles, tidewater, New York.....	1.61	1.66	1.66	1.41	
Angles, Pittsburgh.....	1.45	1.50	1.50	1.25	
Skelp, grooved steel, Pittsburgh.....	1.50	1.50	1.50	1.30	
Skelp, sheared steel, Pittsburgh.....	1.60	1.60	1.60	1.40	

## SHEETS, NAILS AND WIRE.

	Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh.....	2.40	2.40	2.40	2.20	
Wire nails, Pittsburgh.....	1.80	1.80	1.90	1.70	
Cut nails, Pittsburgh.....	1.75	1.75	1.80	1.65	
Barb wire, galv., Pittsburgh.....	2.10	2.10	2.10	2.00	

	METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.....	12.75	12.87½	13.00	13.25	
Electrolytic copper, New York.....	12.50	12.50	12.87½	13.00	
Spelter, New York.....	5.15	5.15	5.30	5.40	
Spelter, St. Louis.....	5.00	5.00	5.15	5.27	
Lead, New York.....	4.37½	4.37½	4.37½	4.35	
Lead, St. Louis.....	4.22½	4.22½	4.22½	4.20	
Tin, New York.....	32.00	32.00	33.25	29.05	
Antimony, Hallett, New York.....	8.12½	8.12½	8.12½	7.50	
Nickel, New York.....	45.00	45.00	45.00	45.00	
Tin plate, 100 lb., New York.....	\$3.84	\$3.84	\$3.84	\$3.64	

\* These prices are for largest lots to jobbers.

S. DIESCHER & SONS.  
Mechanical and Civil Engineers,  
PITTSBURGH, PA.

## THE IRON AND METAL MARKETS

### Pittsburgh

PARK BUILDING, June 22, 1910.—(By Telegraph.)

**Pig Iron.**—The inquiry of the Standard Sanitary Mfg. Company for about 7000 tons of Northern No. 2 foundry and 5000 tons of Southern No. 2, has not yet been closed, but probably will be before the week is out. This is about the only large inquiry for pig iron in the market, but there have been some moderate sales of Bessemer, basic and foundry iron made to other consumers for delivery over the balance of this year. We note a sale of 1200 tons of Bessemer at \$15.60, Valley furnace, and 2200 to 2500 tons of No. 2 foundry at \$14.50, Valley furnace, for delivery over the balance of this year. We quote standard Bessemer iron at \$15.60 to \$15.75; malleable Bessemer, \$15 to \$15.25; basic, \$14.50 to \$14.75; No. 2 foundry, \$14.50 and gray forge, \$14, all at Valley furnace, with a freight rate of 90c. a ton for delivery in the Pittsburgh district.

**Steel.**—Some fairly large sales of prompt Bessemer billets and slabs have recently been made and at relatively low prices. We note a sale of 2500 tons of 4 x 4 in. soft Bessemer billets and one of 2500 tons of 2 x 2 in. soft Bessemer billets. The 4 x 4 in. netted the seller about \$25 and the 2 x 2 in. \$25.50 or higher, the freight rate to the point of delivery being \$1 a ton. We also report a sale of 3000 tons of Bessemer slabs for forward delivery at \$26, delivered, netting the seller about \$25, at mill. New demand for open hearth steel is fairly active and prices are firm. We quote Bessemer billets at \$25 to \$25.50 and sheet bars, \$26.50 to \$27; 4 x 4 in. open hearth billets, \$28 to \$28.50; open hearth, small billets, \$29 to \$29.50; open hearth sheet and tin bars, \$28.50 to \$29, and forging billets, \$31 to \$32, all f.o.b. Pittsburgh, freight to destination added.

**Iron and Steel Scrap.**—The low prices ruling on certain grades of scrap have brought about some fairly large sales in the last few days. We note a sale of 1000 tons of low phosphorus melting scrap at \$18, 1000 to 1200 tons at \$19, guaranteed analysis, and 600 to 800 tons of low phosphorus melting scrap, not guaranteed, at \$16.25, all these being delivered prices in the Pittsburgh district. A sale is also reported of 600 tons of cast iron borings at about \$8.10, f.o.b. Pittsburgh.

(By Mail.)

The general expectation that the iron trade would show material betterment following the arrangement entered into between the Government and the railroads regarding the increase in freight rates, which was to have become effective on June 1, but which the railroads agreed not to file until the Interstate Commerce Commission is given wider powers, has not been realized, and the conditions to-day are unsatisfactory from many points of view. The amount of new business being entered by the mills is only fair, prices on nearly all lines are showing a declining tendency, and this is having the effect of causing buyers to place orders very cautiously, and in nearly all cases only in small lots to cover current needs. The pig iron market is still showing signs of distress, and several recent heavy purchases have brought out lower prices than would have been thought possible several months ago. A notable case is that of the Westinghouse Air Brake Company, which recently bought Northern No. 2 foundry as low as \$14.35, at Valley furnace, and Northern forge at \$14 or below, Valley furnace, deliveries running over last half of the year. The only large inquiry for pig iron in the market at this writing is that of the Standard Sanitary Mfg. Company, which is asking for 6000 to 8000 tons of Northern No. 2 foundry and 2000 to 4000 tons of Southern No. 2, all the iron for delivery in last half of the year. On the Southern iron, one interest has quoted on the basis of \$11.50, Birmingham, for No. 2 for third quarter, and \$12, Birmingham, for fourth quarter. These seem to be about the prices that are being quoted by the larger makers of Southern iron. There is a fair amount of new inquiry for billets, sheet and tin bars, and while open hearth steel is holding up fairly well in prices, soft Bessemer steel is weak, a recent sale of about 2500 tons of 4 x 4 in. Bessemer billets having been made to a Cleveland consumer on the basis of about \$25, Pittsburgh. This steel will not be shipped from Pittsburgh, but likely from a Valley mill, and in that event it will net the seller \$25.50, at mill. Open hearth 4 x 4 in. billets are fairly strong at \$28 to \$28.50, and sheet bars \$28 to \$28.50, maker's mill. In finished iron and steel new demand is disappointing, and specifications against contracts are not coming in as freely as they did some time ago. Prices on nearly all finished lines, including plates, plain structural material, wire products and the lighter gauges of sheets are being shaded. Tin plate is firm, and this is also true of steel pipe. The scrap market is weak and very little is doing in coke. The encouraging feature of the situation is that large jobbers report that stocks of goods they are carrying in their warehouses are moving out more freely; one leading local jobber reports that

its May business was the largest in any one month since last fall. It is believed this will soon be reflected in a heavier demand for finished material from the jobbers to the mills.

**Ferromanganese.**—Reports that a large steel company had bought 600 tons a month of ferromanganese for delivery over all of next year on the basis of \$40, Baltimore, are officially denied. This concern was offered ferro at \$39.50, for forward delivery, and declined it. There is very little new inquiry, and we quote foreign 80 per cent. ferro for delivery over balance of this year at \$39 to \$39.50, Baltimore, the freight rate to Pittsburgh being \$1.90 per ton.

**Ferrosilicon.**—There is not much new inquiry, but some low prices are being named on the small lots for which inquiries are out. Prices are weak, and we quote 50 per cent. ferrosilicon at \$57.50 to \$58, delivered, Pittsburgh. We quote 10 per cent. at \$23; 11 per cent., \$24, and 12 per cent., \$25, all at Ashland furnace, to which \$1.90 a ton should be added for delivery in the Pittsburgh district.

**Muck Bar.**—No sales of this material have been made in this market for some time, and we quote best grades of muck bar, rolled from all pig iron, at about \$28, Pittsburgh.

**Rods.**—New inquiry for rods is light, and is confined mostly to small lots. Consumers of heavy rods, such as chain makers and others, are specifying quite freely against contracts placed last year when prices were lower than they are now. We quote Bessemer open and chain rods at \$31, while \$31.50 and \$32 is quoted on small lots.

**Skelp.**—Additional contracts for heavy sheared plates, estimated at 10,000 to 12,000 tons, have been placed in the past week by pipe mills that have recently taken large orders for line pipe for gas and oil lines. The mills rolling iron and steel plates for pipe are pretty well filled up for the next three or four months. For ordinary widths and gauges we quote grooved steel skelp at 1.50c. to 1.55c.; sheared steel skelp, 1.60c. to 1.65c.; grooved iron skelp, 1.80c., and sheared iron skelp, 1.90c., all f.o.b. mill, Pittsburgh.

**Steel Rails.**—Good sized orders for light rails are being placed by the lumber and coal mining interests, and in the past week the Carnegie Steel Company secured contracts for 4000 to 4500 tons of light rails, and specifications against contracts for about 1000 tons. No orders of moment are being placed for standard sections. We quote steel axles at 1.75c. to 1.80c., and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., \$32; 12 to 14 lb., \$29; 16, 20 and 25 lb., \$28; 30 and 35 lb., \$27.75, and 40 to 45 lb., \$27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at \$28, at mill.

**Structural Material.**—The contract for furnishing and erecting the lock gates for the Isthmian Canal was awarded on Monday, June 20, to the McClintic-Marshall Construction Company, Pittsburgh, its bid having been \$5,374,474.82, or about \$600,000 less than the next lowest bidder, which was the American Bridge Company. There are 46 of these canal gates, each gate consisting of two leaves, the leaves being 65 ft. wide and from 47 ft. 4 in. to 82 ft. high. The majority of the leaves are 77 ft. high. Each of the 77-ft. leaves consists of 18 horizontal plate girders, 65 ft. long, 7 ft. deep, spaced about 4½ ft. center to center, and covered on each side with steel plates. There are 20 gates in the Gatun locks, 12 in the Pedro Miguel and 14 in the Miraflores locks. Each gate consists of two leaves and each leaf will weigh about 600 tons. The entire weight of steel in these gates amounts to 59,000 tons, and all the material will be rolled and furnished by the Jones & Laughlin Steel Company of Pittsburgh. The work will be fabricated at the Rankin shops of the McClintic-Marshall Construction Company and shipped either via steamers from one of the Eastern seaboard cities or by water from Rankin to New Orleans and from there by steamer direct to the Isthmus. The entire contract is to be completed in about three years, and active work of erection will be started about January 1 next. The McClintic-Marshall Construction Company expects to ship the material from its shops at Rankin at the rate of 2500 tons a month, these shipments extending over a period of 24 months. The erection of the work will be carried on simultaneously at Gatun and Miraflores. The American Bridge Company has taken a contract for the Montreal bridge for replacing the old cantilever bridge across the St. Lawrence River at Montreal, involving 15,000 to 20,000 tons; also a bridge for the Soo Line across the Mississippi River at St. Paul, consisting of a number of arched trussed spans, about 4000 tons. Numerous smaller jobs have been placed, and the structural fabricating concerns have more work on their books at present than at any time in the past year. In spite of the large amount of work that is being placed, prices are weak, and on any desirable tonnage 1.45c. on beams and channels up to 15-in. is obtainable. We quote beams and channels up to 15-in. at 1.45c. to 1.50c., at maker's mill.



## THE IRON AND METAL MARKETS

**Plates.**—The inquiry of the Baltimore & Ohio Railroad for 3000 to 5000 steel cars and 2000 to 3000 box cars with steel underframes has not yet been placed. Only a few unimportant car orders have been given out in the past week, and it is evident that the railroads, for the time being at least, have decided not to place heavy contracts for cars until the situation in freight rates is clearer. On the narrow sizes of plates some of the outside mills are naming as low as 1.40c., and on the wide sizes 1.45c. to 1.50c. is being quoted. We quote ¼-in. and heavier plates in narrow sizes at 1.40c. to 1.45c., and in the wider sizes at 1.45c. to 1.50c., Pittsburgh.

**Sheets.**—No settlement has yet been reached with the independent sheet mills on the wage scales for the year beginning July 1, although a two days' conference between the independent sheet mills and the Amalgamated Association was held in this city last week. Another conference is to be held on Wednesday, June 22, and it is possible that at this conference the sheet mill wage scales will be adjusted. The men ask for an advance over the present scale of about 10 per cent., but the sheet mill owners refuse to grant this, stating that present conditions in the sheet trade do not warrant it. There is only a fair demand for the lighter gauges of black and galvanized sheets, and regular prices continue to be shaded by some mills for prompt shipment to the extent of \$2 to \$3 a ton. For blue annealed and electric sheets, new demand is quite active, but not as heavy as some time ago, while premiums on prices for prompt delivery have about disappeared. Regular prices on black, galvanized and roofing sheets, which in the lighter gauges are being shaded \$2 to \$3 a ton on contracts for early shipment, will be found on a previous page.

**Tin Plate.**—Output of tin plate continues at a record breaking pace, and will be heavier in June than ever before in any one month in the history of the tin plate trade. The Jones & Laughlin Steel Company will soon start up part of the tinning department in its new tin plate mills at Aliquippa, the concern having been operating 12 hot mills on black plate for the past month or more. The few independent tin plate mills that sign the scale have not yet come to an agreement with the Amalgamated Association on the tin plate wage scales for the year beginning July 1. A second conference is to be held in Pittsburgh on Wednesday, June 22, at which time a settlement may be reached. The men ask for an average advance over the present scale of about 10 per cent., which the tin plate mills refuse to grant. New demand for tin plate is light, as the buying season is over, but all the leading tin plate mills are filled up with contracts that will take practically their entire output for the balance of this year, and consumers are specifying very freely against these contracts. Prices are firm, and we quote 100-lb. cokes at \$3.60 per base box, f.o.b. Pittsburgh.

**Bars.**—There is a fair volume of new business in both iron and steel bars, new orders for steel bars being more plentiful than for iron. The implement makers and wagon builders, who made heavy contracts about a month ago for their requirements over last half of this year and in some cases through first half of next year, will soon commence to specify liberally on these contracts, and the steel bar mills are pretty well filled up for the next three or four months and in some cases are from six to eight weeks behind in shipments. We continue to quote steel bars at 1.45c. and common iron bars at 1.50c. to 1.55c., Pittsburgh.

**Hoops and Bands.**—A moderate volume of new business is being placed, but specifications against contracts are not coming in as freely as some time ago. Slightly lower prices are ruling on hoops and bands, rolled from soft Bessemer billets, owing to the weakness in prices of Bessemer steel. We quote steel hoops for forward delivery at 1.50c. to 1.60c., while for prompt shipment as high as 1.65c. is obtainable. Steel bands are 1.40c. to 1.50c. on contracts for forward delivery and 1.60c. to 1.65c. for reasonable prompt shipment, these carrying steel bar card extras.

**Spelter.**—The market is dull and quiet and we quote prime grades of Western spelter at 5c., East St. Louis, or 5.12½c., Pittsburgh. On a firm offer this might be shaded.

**Spikes.**—The Chicago, Burlington & Quincy and the Chicago, Rock Island & Pacific railroads have recently placed some good sized orders for railroad spikes, the business going to the Chicago mill. Local makers of railroad spikes report they are receiving only small orders from the railroads, and these are mostly for repair work. Prices are lower and we quote standard sizes of railroad spikes, 4½ x 9-16 and larger, at 1.55c. to 1.60c. for Western shipment and 1.60c. to 1.65c. for local trade. Boat and small railroad spikes are also lower in price and we quote these at 1.65c. to 1.70c., base, these prices being for carload and larger lots.

**Rivets.**—New buying in rivets is mostly of a hand to mouth character to meet current needs of consumers, while specifications against contracts are coming in at only a fairly

satisfactory rate. Some of the smaller makers continue to shade regular prices, which are 2.15c. for structural rivets and 2.25c. for boiler rivets, f.o.b. Pittsburgh.

**Shafting.**—New demand for shafting has fallen off to some extent, while specifications are not coming in as freely against contracts as they did some time ago. As a result of this the shafting makers are catching up on deliveries to some extent, having been very much behind in shipments for some months. Regular discounts on shafting are 55 per cent. off in carload and larger lots and 50 per cent. off in small lots, delivered in base territory. For desirable specifications the carload price of 55 per cent. off is sometimes shaded to the extent of about 55 and 5 off.

**Wire Products.**—Conditions in the wire trade remain about the same as noted in this report for several weeks past. New demand is only fair, and specifications against contracts are not coming in as freely as the mills would desire. We quote wire nails at \$1.80 in carload and larger lots; galvanized barb wire, \$2.10; painted, \$1.80; annealed fence wire, \$1.60; galvanized, \$1.90; cut nails, \$1.75 to \$1.80, all f.o.b. cars, Pittsburgh, with usual terms, and freight to destination added.

**Merchant Pipe.**—As indicated in this report last week, the Gulf Refining Company has placed a contract with the National Tube Company for 100 miles of 6-in. line pipe, used for laying an oil line in Texas. No other large contracts for oil and gas lines have been placed since our last report, but several projects are under way and contracts will be placed with the mills as soon as rights of way have been secured. On lap weld sizes the pipe mills are pretty well filled up for the balance of this year, but on butt weld sizes the situation is very dull and unsatisfactory. The Republic Iron & Steel Company is operating one lap weld furnace in its new pipe mill at Lansingville, Ohio, making pipe up to 6 in. in diameter, and expects to put another lap weld furnace on about July 1. We are advised by the mills that regular discounts on iron and steel pipe are being held, but it is stated from other sources that discounts on iron pipe are being shaded.

**Boiler Tubes.**—It is understood that the tubes for the 65 locomotives to be built by the Chicago, Burlington & Quincy Railroad and for the 85 locomotives to be built by the Harriman Lines will be placed with local mills. Some heavy contracts for locomotive tubes have been placed in the past month, and the mills are quite busy. On merchant tubes demand is quiet. Regular discounts on locomotive and merchant tubes will be found on another page, but these are sometimes shaded.

**Coke.**—No active inquiries for furnace coke for last half of the year are in the market, and both furnace and foundry coke continue quiet, with prices weak. We quote best grades of furnace coke running under 1 per cent. in sulphur for delivery over last half of the year at \$1.80 to \$1.85, and best grades of 72-hour foundry coke at \$2.15 up to \$2.40 in net tons at oven for same delivery. Furnace coke loaded on cars which has to be moved is being offered at \$1.65 to \$1.70 for best grades. Output of coke has been materially restricted in the past month, the Upper and Lower Connells-ville regions now turning out about 395,000 tons per week.

**Iron and Steel Scrap.**—The market on this material is extremely quiet, a number of plants of scrap consumers closing down on June 30 for inventory and repairs, and not desiring to take in any material until they are ready to start up again. Consumers of scrap located at Monessen, Sharon and Brackenridge, Pa., have been heavy buyers of steel scrap, cast iron borings and turnings in the past three or four weeks, but are now understood to be pretty well filled up for some time ahead. Prices have shown no material change in the past week, but on the whole are weak. We have reduced quotations on some grades about 25c. a ton, but hardly enough scrap is moving at present from dealers to consumers to establish market prices. Dealers quote about as follows, per gross ton, for delivery at Pittsburgh or elsewhere as noted:

Heavy steel scrap, Steubenville, Folsom, Sharon, Monessen and Pittsburgh delivery.....	\$15.00 to \$15.25
No. 1 foundry cast.....	14.25 to 14.50
No. 2 foundry cast.....	13.25 to 13.50
Bundled sheet scrap, at point of shipment.....	10.50 to 10.75
Re-rolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.....	16.00 to 16.25
No. 1 railroad malleable scrap.....	14.00 to 14.25
Grate bars.....	11.00 to 11.25
Low phosphorus melting stock.....	18.50 to 19.00
Iron car axles.....	25.00 to 25.25
Steel car axles.....	21.00 to 21.25
Locomotive axles.....	26.00 to 26.25
No. 1 busheling scrap.....	13.50 to 13.75
No. 2 busheling scrap.....	9.00 to 9.25
Old car wheels.....	14.00 to 14.25
Sheet bar crop ends.....	17.00 to 17.25
Cast iron borings.....	8.00 to 8.25
Machine shop turnings.....	9.75 to 10.00

# THE IRON AND METAL MARKETS

## Chicago

FISHER BUILDING, June 22, 1910.—(By Telegraph.)

The iron and steel market and general business conditions in the West do not harmonize with the pessimistic reports that are heard in financial circles. The first half of the year in the West has made a fairly good showing. The new business and specifications of the steel mills in this district are equal to the average of last year, and the main finishing departments of the mills are operating at full capacity. Outside the influence of railroad buying business is really good in the West, and the amount of material going into consumption is probably larger than in any former period, with prices showing a satisfactory average on everything except pig iron. The railroads are not economizing on track steel. They have trimmed close on orders for bar iron and miscellaneous equipment, but this would be explained by their desire to retrench on operating expenses after a bad winter. If the railroads were active buyers the market would undoubtedly be as strong as it was last fall. Crop conditions will control the activity of the railroads during the next two or three months. Large crops of spring wheat and corn would force heavy buying, while unfavorable reports on these crops would afford another excuse for delay in railroad purchasing departments. The market for soft steel bars continues very strong and buyers cannot obtain early delivery on new business. Blue annealed sheets are firm and command premiums for prompt delivery, but there is pronounced weakness in black and galvanized sheets and concessions are also reported on nails and wire. The mills are receiving more specifications for plates and structural material, and fabricators are getting better prices on contract work than they obtained last month. The Panama contract and other large structural jobs which have been closed recently have had a good effect in the Western market. The merchant steel mills are apparently assured of a big year in supplying the agricultural and automobile industries, and the peculiar strength of the industries goes far to offset the weakness in railroad equipment lines, thus making a fair average of market conditions. The only notable condition in the scrap market is the surplus of railroad malleable and steel scrap. This material and short melting rails are going begging on account of the lack of demand for heavy material among malleable and steel foundries.

**Pig Iron.**—The market for both Northern and Southern iron is very dull and offers no immediate prospect of relief from the present condition of small profits for the furnace interests. The business done in both Northern and Southern grades is confined chiefly to early deliveries. It is the general opinion among Chicago iron men that melters in this territory are pretty well covered for third quarter. The furnace interests have had a steady run of small orders for the past six months, and, while the business done has seemed small by comparison with active markets, there has been enough iron offered on the bargain counter and taken by purchasers to keep their yards filled. Near deliveries for the past six months have averaged 50c. less than the price that could be done for a full half year and this condition of the market still continues, as enough furnaces are selling now at \$11.50 for third quarter to take care of the greater part of the business for early delivery, although the leading Southern interests are holding firm for \$12. On some brands of Southern iron the furnaces are asking \$12.50 and \$13 for last quarter, and the market is firm at \$12 for the last half, although some iron not far from No. 2 in quality has been sold at \$11.50. One sale of 4000 tons was made recently at this price for prompt delivery to a Chicago buyer, but an inquiry from a sanitary interest for a round lot for the last half has not developed a price satisfactory to the buyer. Sales of Northern iron run chiefly in small lots of a carload to 500 tons. There seems to be more or less confusion in the quoting of Chicago prices on account of the high switching charge for delivery from local furnaces to points in the neighborhood of 50c. per ton, and sales at \$16.75, delivered in Chicago, would net the furnace around \$16.25. Recent sales in lots of 100 to 300 tons have been made as high as \$17 to \$17.25, delivered, for third quarter. One of the local interests, however, had an unusual run of off-grade iron recently on which special prices have been made. The eighth blast furnace at Gary is completed and ready to be blown in at early date. The following quotations are for June shipment, Chicago delivery:

Lake Superior charcoal.....	\$18.50 to \$19.00
Northern coke foundry, No. 1.....	17.25 to 17.75
Northern coke foundry, No. 2.....	16.75 to 17.25
Northern coke foundry, No. 3.....	16.25 to 16.75
Northern Scotch, No. 1.....	17.75 to 18.25
Southern coke, No. 1.....	16.35 to 16.85
Southern coke, No. 2.....	15.85 to 16.35
Southern coke, No. 3.....	15.60 to 16.10
Southern coke, No. 4.....	15.35 to 15.85
Southern coke, No. 1 soft.....	16.35 to 16.85
Southern coke, No. 2 soft.....	15.85 to 16.35
Southern gray forge.....	15.10 to 15.60

Southern mottled.....	14.85 to 15.35
Malleable Bessemer.....	16.75 to 17.25
Standard Bessemer.....	18.40 to 18.90
Jackson Co. and Kentucky silvery, 6%.....	19.40 to 19.90
Jackson Co. and Kentucky silvery, 8%.....	20.40 to 20.90
Jackson Co. and Kentucky silvery, 10%.....	21.40 to 21.90

(By Mail.)

**Billets.**—There are practically no inquiries in this market and Pittsburgh prices govern.

**Rails and Track Supplies.**—There is a steady run of small orders for standard rails, most of which are taken by Eastern mills represented in this market. The light rail trade is good and the mills are well covered with specifications for track supplies. We quote standard railroad spikes at 1.80c. to 1.90c., base; track bolts with square nuts, 2.50c. to 2.60c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., \$27; 30 to 35 lb., \$27.75; 16, 20 and 25 lb., \$28; 12 lb., \$29, Chicago.

**Structural Material.**—Structural material is showing steady improvement, and the fabricators report that they are getting better prices on contract work than they were able to obtain two or three weeks ago. The American Bridge Company had an exceptional run of business last week. This interest took a bridge over the Arkansas River at Fort Smith calling for 4500 tons, and has also booked 650 tons for additional buildings for the Butte & Superior Copper Company, Butte, Mont., 400 tons for dock crane construction at Texas City, Texas, 360 tons for a warehouse for the Crane Company at Salt Lake, 325 tons of small bridges for the Frisco Railroad, 300 tons for car barns at Denver, Colo., for the Denver City Tramway Company, and 150 tons for a school building at Denver. The general contract for the Union Depot at Memphis, Tenn., has been let to Murch Brothers at St. Louis, but the steel construction, 708 tons, is not yet placed. M. B. White of San Francisco has taken a contract for a 322-ton bridge over Walker's Slough in California. The structural mills are beginning to get specifications on the fabricated work that has been taken under contract during the past six weeks, and there is a better tone in the market. We quote plain material from mill, 1.68c. to 1.73c., Chicago; from store, 1.90c. to 2c., Chicago.

**Plates.**—There is a fair amount of current business in tank plates and other lines of general trade. Good specifications came out last week from car builders on the car contracts that were placed during May, and the local mills are now in better shape on specifications. The only important car inquiries now pending are from Western railroads, from the Hawley lines, which are in the market for 5750 cars, 5500 of which are steel underframes. It is rumored that these roads will buy 2000 or 3000 additional cars, but this has not yet taken the form of definite inquiry. We quote mill prices at 1.68c. to 1.73c., Chicago; store prices, 1.90c. to 2c., Chicago.

**Sheets.**—Blue annealed sheets are holding very firm and premiums are still obtained in this market for prompt deliveries. Eastern mills, however, are competing actively for business in black and galvanized sheets and schedule prices are becoming merely nominal quotations. We quote as follows, Chicago: No. 10 annealed, 1.93c.; No. 28 black, 2.58c.; No. 28 galvanized, 3.68c. Prices from store, Chicago, are: No. 10 blue annealed, 2.25c. to 2.35c.; No. 28 black, 3c. to 3.10c.; No. 28 galvanized, 4c. to 4.10c.

**Bars.**—Prompt or early deliveries are very hard to get on soft steel bars. There are inquiries in this market for fair lots, and the buyers seem unable to understand the trouble they have in getting some mill to accept the business for prompt shipment. The demand for hard steel bars is fair; but not so strenuous, and some of the mills will close down during July. The bar iron market is very quiet and soft, owing to the lack of buying by railroads and the fact that they have not specified all the tonnage that they bought for first half. For prompt shipment buyers can get 1.45c. or better, but the mills are not anxious to contract for last half or any extended deliveries on bar iron at the present level of prices. The efforts of the railroads to economize until the end of their fiscal year have had a very depressing effect on this branch of the trade. Subject to the usual delay in delivery of soft steel bars, we quote as follows: Soft steel bars, 1.63c. to 1.68c.; bar iron, 1.45c. to 1.50c.; hard steel bars rolled from old rails, 1.50c. to 1.60c., all Chicago.

**Rods and Wire.**—Industrial buyers of wire products are now contracting for their requirements to the end of the year, and prices on this business are reported practically the same as have prevailed during the first half on the basis of 1.65c., Pittsburgh, for plain wire. Large buyers in the jobbing trade, however, are able to obtain concessions on nails and agricultural wire. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.83c.; wire nails, 2.03c.; painted barb wire, 2.03c.; galvanized, 2.33c., all Chicago.

**Merchant Steel.**—The agricultural and automobile industries are contributing very liberal contracts to the mills



## THE IRON AND METAL MARKETS

which make special lines of merchant steel. Cold rolled shafting is so scarce it can only be obtained by yearly buyers who specify far ahead, and smooth machinery steel is in such demand that it brings almost as good prices as the regular schedule of cold rolled material. Buyers of these special grades of steel will probably be forced to depend upon store supplies the coming year unless they give long distance specifications.

**Cast Iron Pipe.**—No large lettings are reported, but there is a steady run of small orders running from a carload to small round lots. The smaller municipalities are steady buyers and the railroads are following a hand-to-mouth policy, which makes a great deal more office work for the pipe manufacturers than the old method of buying culvert pipe on yearly contracts. The foundries are reported busy on contract business which has been taken during the past six months. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., \$28.50; 6 to 12 in., \$27.50; 16-in. and up, \$26.50, with \$1 extra for gas pipe.

**Metals.**—Consumers in the West have been liberal buyers of copper during the past week, although not much consumptive buying is reported in other markets. Spelter is very dull, with not enough business going to test the market. Tin is a shade lower and lead remains practically unchanged. We quote Chicago prices as follows: Casting copper, 12½¢; lake, 13¢, in carloads, for prompt shipment; small lots, ¼¢ to ¾¢ higher; pig tin, car lots, 33½¢; small lots, 35¢; lead, desilverized, 4.30¢ to 4.35¢, for 50-ton lots; corroding, 4.50¢ to 4.60¢, for 50-ton lots; in carloads, 2½¢ per 100 lb. higher; spelter, 5.20¢ to 5.25¢; Cookson's anti-mony, 10½¢, and other grades, 9¼¢ to 10¼¢; sheet zinc is \$7.50, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 12½¢; copper bottoms, 10½¢; copper clips, 12½¢; red brass, 11¼¢; yellow brass, 9¼¢; light brass, 6¼¢; lead pipe, 4¼¢; zinc, 4¼¢; pewter, No. 1, 24¢; tin foil, 26¢; block tin pipe, 30¢.

**Old Material.**—The scrap market has entered the mid-summer period of dullness. There is no active inquiry from buyers, and while dealers are generally able to dispose of the material they have in transit there are occasional instances where distress concessions have to be made to force a sale. There is a fair demand for agricultural malleable, but railroad malleable is hard to move. Steel scrap is weak and does not command much above \$13, delivered. Distress prices are reported on short steel rails, as the malleable foundries are not buying this material to any extent while a considerable tonnage is pressing on the market for disposition. Large sales of scrap of all grades have been made by the railroads during the past month, both on lists and private trades, but this material as a rule will not arrive for distribution for 30 to 60 days. There is a fair demand for borings and turnings, and wrought scrap is holding steady. Country dealers are shipping very little material, and no activity is expected in the market for some time until the malleable and steel foundries and the rolling mills are able to get a line on their prospects for business with the railroads during the fall and last half. Following prices are per gross ton, delivered, Chicago:

Old iron rails.....	\$17.00 to \$17.50
Old steel rails, rerolling.....	16.50 to 17.00
Old steel rails, less than 3 ft.....	14.00 to 14.50
Relaying rails, standard sections, subject to inspection.....	24.00 to 25.00
Old car wheels.....	15.50 to 16.00
Heavy melting steel scrap.....	13.00 to 13.50
Frogs, switches and guards, cut apart.....	13.00 to 13.50
Shoveling steel.....	12.50 to 13.00

The following quotations are per net ton:

Iron angles and splice bars.....	\$15.00 to \$15.50
Iron car axles.....	20.00 to 20.50
Steel car axles.....	20.00 to 20.50
No. 1 railroad wrought.....	12.75 to 13.25
No. 2 railroad wrought.....	11.75 to 12.25
Springs, knuckles and couplers.....	12.00 to 12.50
Locomotive tires, smooth.....	17.00 to 17.50
No. 1 dealers' forge.....	11.00 to 11.50
Steel axle turnings.....	9.50 to 10.00
Machine shop turnings.....	8.00 to 8.50
Cast and mixed borings.....	5.00 to 5.50
No. 1 bushing.....	10.50 to 11.00
No. 2 bushing.....	8.00 to 8.50
No. 1 boilers, cut to sheets and rings.....	9.50 to 10.00
No. 1 cast scrap.....	13.00 to 13.50
Stove plate and light cast scrap.....	11.00 to 11.50
Railroad malleable.....	12.00 to 12.50
Agricultural malleable.....	11.50 to 12.00
Pipes and flues.....	9.50 to 10.00

### Birmingham

BIRMINGHAM, ALA., June 20, 1910.

**Pig Iron.**—Despite the efforts to maintain a schedule of \$12, Birmingham, for No. 2 foundry iron the bulk of the tonnage booked in the past week was at figures representing a decline of 50 cents from such a basis. It cannot be definitely said that deliveries to cover the remainder of this year

can be had lower than \$12, but for deliveries to cover the third quarter \$11.50 is now considered the market price. An aggregate of some 10,000 tons for shipment in July-September is reported sold during the past week. Of this amount 6500 tons was sold by one interest. A lot of 2000 tons for delivery over the balance of the year was sold at \$12 per ton, Birmingham, but in this instance there was an analysis stipulation. A leading merchant interest reports the sale of lots of 1000, 600 and 500 tons, for shipment during July and August. This was sold at the equivalent of \$11.50 per ton, Birmingham, with a differential of 50¢ for No. 3 foundry, which grade made up about 50 per cent. of the aggregate. No report has so far been made of lower grades than No. 3 foundry having been sold on a \$11.50 per ton basis for No. 2 foundry, with 50¢ differentials, gray forge and No. 4 foundry being quoted on a \$12, Birmingham, schedule. As has been the case for some weeks past the daily output of low grades is smaller than usual and the accumulation in this district is very limited. The aggregate of all foundry iron stocks is now estimated at 125,000 tons, while warrant yard holdings have been reduced to less than 50,000 tons. With 14 stacks being operated on foundry iron the daily production is estimated at approximately 2500 tons. From all indications the local melt is normal.

**Cast Iron Pipe.**—No change is noted in the status of this market since last report. The business offered is in comparatively small lots and the matter of larger requirements is yet an uncertainty. The aggregate tonnage on order books is quite satisfactory to producers in view of conditions now existing, and no efforts have yet been made to induce trading on a larger scale. In one instance it has been stated that order book requirements would necessitate the operation of all equipment for four months from date. Quotations have not been changed and for the business offered prices quoted are being maintained. We quote water pipe as follows, per net ton, f.o.b. cars here: 4-in. to 6-in., \$23; 8-in. to 12-in., \$22; over 12-in., average, \$21, with \$1 per ton extra for gas pipe.

**Old Material.**—A decrease in the local consumption is noted, but the actual movement during the past week was about equal to that of the week previous. From a dealer's standpoint wrought and steel grades have become scarce, but so far this has not been reflected in prices. In view of the decline in pig iron prices for old material are revised, and we quote as follows per gross ton, f.o.b. cars here:

Old iron axles.....	\$16.50 to \$17.00
Old iron rails.....	12.50 to 13.00
Old steel axles.....	16.00 to 16.50
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	9.00 to 9.50
No. 1 country wrought.....	8.50 to 9.00
No. 2 country wrought.....	8.00 to 8.50
No. 1 machinery.....	10.00 to 10.50
No. 1 steel.....	9.00 to 9.50
Tram car wheels.....	9.50 to 10.00
Standard car wheels.....	11.00 to 11.50
Light cast and stove plate.....	7.00 to 7.50

### Philadelphia

PHILADELPHIA, PA., June 21, 1910.

The usual summer dullness appears to be setting in, and this, in connection with uncertainty regarding prices of both crude and finished materials, has restricted buying to a considerable extent. Occasional inquiries for round lots of pig iron come out, but these are mostly for extended delivery, which class of business sellers are not anxious to put on their books at the present range of prices. More interest is shown in basic iron, but the sales made do not indicate any immediate buying movement. At the meeting of the Eastern Pig Iron Association last week it was shown that the statistical position was unchanged from the previous month, which would seem to indicate that as far as this territory was concerned, the present curtailment of production was sufficient for immediate requirements. Finished materials have not been particularly active. The contract for the Panama Canal lock work is by far the largest proposition around, and will, it is understood, go to the low bidder, the McClintic-Marshall Construction Company, the bulk of the plates and shapes being furnished by an independent Western interest. A little more business is being done in billets at unchanged prices, but sheets can be had at a concession. Refined iron bars are dull, while but little change is to be noted in the old material situation.

**Pig Iron.**—While there has been more inquiry, particularly for foundry grades, the actual volume of business transacted has been comparatively light. Inquiries for some large blocks for last half and even for delivery extending over the first half of 1911 are to be noted. The Baldwin Locomotive Works is asking for prices on 4000 tons of foundry iron, 2.50 silicon and over, for delivery during the last four months of the year. Another nearby consumer has an inquiry out for 5000 tons, while the requirements of the Pennsylvania Railroad are still pending, but will be closed,

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it is expected, in a few days. Other smaller inquiries are before the trade, but buyers appear in no haste to place orders, particularly when prices continue weak. A few sellers still hold No. 2 X foundry at \$17, delivered, in this territory, but sales at this figure are not large, as other makers of standard brands are selling freely at \$16.75, delivered, and in some cases \$16.50 is easily done, while this price has, it is stated, been shaded for less desirable brands. At these selling prices producers are more inclined to confine sales to near future deliveries, although in close competition the same prices are said to apply on deliveries extending over the last half. The majority of the recent sales have been in small lots, principally for prompt or third quarter shipment. A few good sales of low grade iron have, however, been reported. These have been mostly Southern iron at an \$11 basis for No. 3 foundry. Makers of Northern low grade iron have not yet met the views of pipe makers regarding price, being about 25c. a ton apart. The majority of the Virginia producers are holding at \$14, furnace, for No. 2 X, with No. 2 plain frequently at the same price; \$13.75, furnace, has, however, been done for No. 2 plain, and some buyers claim to have done that price for prompt No. 2 X. The volume of business taken has, however, been small. Information regarding some quiet sales of basic iron made several weeks ago has come out; this involved one block of 12,000 tons to an Eastern steel works at a price between \$15.50 and \$16, delivered; the actual figure is withheld, but it is stated that the seller will now make no further sales under \$16, delivered. A few small lots of basic and one moderate block have been sold to consumers in the Harrisburg district at \$16, delivered, during the past few weeks, but the large consumers in the East show no interest in the market, their requirements for the third quarter being pretty fully covered, although some moderate lots may be taken if the price were considered attractive. One lot of about 4000 tons of 0.035 low phosphorus iron, shipment over the last half, delivery outside of this territory, has been sold by a seller here at a price equal to \$22.75, delivered here. Several hundred tons of the same grade were sold to a Delaware River melter at the same figure, while 0.030 iron has been sold at \$23, delivered here. Forge iron has been quiet, inquiry for 1000 tons for mill purposes is reported, but no sales of importance are reported. The following range of quotations for standard brands, delivery in buyers' yards, for shipment over various portions of the last half, is named:

Eastern Pennsylvania, No. 2 X foundry	\$16.50 to \$17.00
Eastern Pennsylvania, No. 2 plain	16.25 to 16.50
Virginia, No. 2 X foundry	16.75 to 17.00
Virginia, No. 2 plain	16.75
Gray forge	15.50 to 15.75
Basic	16.00
Standard low phosphorus	22.75 to 23.00

**Ferromanganese.**—While there has been no fresh business of importance from consumers in this territory, some inquiry, in which local sellers are interested, has developed in the West. Business before the trade moves very slowly. Prices for 80 per cent. ferro, delivery during the last half, range from \$39.50 to \$40, Baltimore, although some sellers ask an advance for early 1911 delivery.

**Billets.**—A moderate amount of business for early third quarter delivery has been placed. Consumers are less disposed, however, to contract for the full quarter's requirements, and are, to a large extent, taking only moderate lots for near future requirements. Standard open hearth rolling billets for early shipment are quoted at \$28.50 to \$29, delivered, dependent on the tonnage involved. Forging billets continue fairly active, with prices comparatively firm at \$31 to \$32, Eastern mill, the usual extras applying for high carbons and special sizes.

**Plates.**—Business placed continues of a miscellaneous character. Occasional lots of 1000 tons, principally for bridge work, have been taken, and more business of this class, as well as tank plates, is pending. Consumers are still making efforts to obtain price concessions, but sellers appear a trifle firmer on recent quotations, 1.65c., delivered, being the usual minimum for ordinary plates delivered in this territory.

**Structural Material.**—While makers and fabricators are figuring on a number of moderate propositions in the way of buildings and bridges, contracts close up very slowly, the bulk of the business being of a varied character, mostly, however, in small lots. Competition for business is still very sharp, and, while low price sellers have stiffened up a trifle, delivered in this territory, 1.60c. to 1.65c. represents the range of the market, the minimum price being for particularly desirable business.

**Sheets.**—Mills are fully engaged, but the amount of business on makers' order books is not very satisfactory, consumers' purchases being of a hand to mouth fashion. For good specifications prices can be shaded about \$1 a ton. For ordinary business the following range of prices is

named: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3c.; No. 27, 3.10c.; No. 28, 3.20c.

**Bars.**—Business continues quiet, buyers show little interest in the market and inquiries have declined. Refined iron bars are being held at unchanged prices, 1.47½c. to 1.55c. representing the range of quotations for delivery in this vicinity. Steel bars are in fairly good demand with prices firm at 1.00c. delivered.

**Coke.**—Contracts for furnace coke for second half delivery have been pretty generally cleaned up. Several large contracts have been closed recently. There is still some inquiry for spot furnace coke, one for a lot of 5000 tons being before the trade. Foundry coke has been quiet, moderate sales being reported at \$2.25 to \$2.50, at ovens. The following range of prices represents the market, per net ton, for delivery in this vicinity:

Connellsville furnace coke	\$4.00 to \$4.15
Foundry coke	4.50 to 4.75
Mountain furnace coke	3.60 to 3.75
Foundry coke	4.10 to 4.35

**Old Material.**—The general tone of the market is unchanged. Several small transactions in different grades are reported, but the demand on the whole is dull. Heavy melting steel has been taken in small lots at \$14.50, \$14.75 and \$15 by outside steel melters, who now offer \$14.50 for moderate lots. The associated steel mills now offer \$15 for strictly No. 1 heavy melting steel, delivered Conshohocken. There has been more inquiry for cast borings, which show a slight advance, there being a disposition on the part of holders not to let borings go at the recent low price. A nearby steel mill, which operates a classification yard, obtained the recent lot of 800 to 900 tons of Panama scrap from the Government at a price equal to about \$13.40, delivered. What business there is going is usually in small lots for prompt shipment, prices for which range about as follows for delivery in buyers' yards in this vicinity, although on quite a number of grades the quotations are entirely nominal:

No. 1 steel scrap and crops	\$14.50 to \$15.00
Old steel rails, refolling	16.00 to 16.50
Low phosphorus	20.00 to 20.50
Old steel axles	20.50 to 21.50
Old iron axles	26.50 to 27.50
Old iron rails	19.50 to 20.00
Old car wheels	15.00 to 15.50
No. 1 railroad wrought	16.50 to 17.00
Wrought iron pipe	15.00 to 15.50
No. 1 forge fire	12.50 to 13.00
No. 2 light iron	8.50 to 9.00
Wrought turnings	9.75 to 10.25
Cast borings	9.50 to 9.75
Machinery cast	15.00 to 15.50
Railroad malleable	14.50 to 15.00
Grate bars	12.50 to 13.00
Stove plate	10.00 to 10.50

The Pennsylvania Steel Company, Maryland Steel Company, Spanish-American Iron Company and Penn-Mary Coal Company, Philadelphia, announce the removal of their offices to the Morris Building, 1421 Chestnut street.

### Cincinnati

CINCINNATI, OHIO, June 22, 1910.—(By Telegraph.)

In finished lines all jobbing and warehousing interests in this market report business satisfactory to excellent, showing in number of transactions rather than quantity in the aggregate. Some contracting is noted in both furnace and foundry coke, and the closing days of June are expected to see some good sized contracts through local offices for the period beginning July 1. Buyers and sellers in the iron markets are closer together this week than for some time, a modification of ideas in both divisions lending some strength to what appeared to be a declining market. Old material is weaker and no change is expected for the summer.

**Pig Iron.**—More life is manifested in the pig iron market this week because of the presence in the city of various important interests buying and producing and the consideration of important tonnages at prices which some of the leading interests hitherto declined to have submitted. The largest inquiry is that of a large Central foundry interest, whose buyer is in New York, calling for 5000 tons of Nos. 3 and 4 foundry and No. 2 soft for last half. Another is for 1000 tons Nos. 2 and 4 foundry from a north-central Ohio iron manufacturing plant for last half, and various concerns in the territory are asking for smaller tonnages ranging from 100 to 600 tons. The inquiry of a south-central Ohio concern for 2000 to 3000 tons is reported to be still pending. Among the inquirers are a stove works in Ohio, a plow works in Indiana and a foundry in northern Ohio. Alabama irons are held rather firmly in this market at the \$12 minimum for last half, with at least one large interest limiting deliveries at this price to third quarter. Standard Alabama irons can be had at \$11.50, Birmingham, for



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prompt delivery, and on acceptable tonnages undoubtedly through the third quarter. The visit of a large Eastern buyer for a sanitary manufacturing concern led to speculation on a possible new price for Southern foundry iron, but so far as can be ascertained the offer of \$11.25 for No. 2 foundry was unproductive. One Alabama furnace interest which announces \$12 as its absolute minimum for any delivery gives out the impression that they will blow out before making any lower price. Another on a \$12 basis put in the \$11.50 price for one day last week, but withdrew it. Silvers are shaded to approximately \$18, Jackson County furnace, a late sale in Michigan territory establishing the new price. Furnaces in the Ironton district having malleable are holding rather firmly to \$15.50, but others in the open field using Lake ore more extensively are said to be shading to \$15.25. Low grades appear to be a trifle more plentiful with a moderate demand, and forge is probably obtainable as low as \$10.75, Birmingham. For immediate delivery and through the last of year based on freight rates of \$3.25 from Birmingham and \$1.20 from Hanging Rock district we quote f.o.b. Cincinnati at follows:

Southern coke, No. 1 foundry.....	\$15.25 to \$15.75
Southern coke, No. 2 foundry.....	14.75 to 15.25
Southern coke, No. 3 foundry.....	14.50 to 14.75
Southern coke, No. 4 foundry.....	14.25 to 14.50
Southern coke, No. 1 soft.....	15.25 to 15.75
Southern coke, No. 2 soft.....	14.75 to 15.25
Southern gray forge.....	14.00 to 14.25
Ohio silvery, 8 per cent. silicon.....	19.20 to 19.70
Lake Superior coke, No. 1.....	16.70 to 17.20
Lake Superior coke, No. 2.....	16.20 to 16.70
Lake Superior coke, No. 3.....	15.70 to 16.20
Standard Southern car wheel.....	25.25 to 25.75
Lake Superior car wheel.....	22.25 to 22.75

(By Mail.)

**Coke.**—There is a little more interest in furnace coke; several Southern furnaces have contracted through Cincinnati agencies for a year's supply from July 1, and for the most part on a sliding scale basis. Some spot Wise County brands are moving at \$1.70, and as low as \$1.60 has been done. Foundries are closing, too, for the half and entire year, beginning July 1, and Connellsville grades are quotable at \$2.25 to \$2.50 on contract, and spot coke is obtainable all the way from \$2.15 to \$2.50. Pocahontas furnace brands are selling at \$1.75 to \$1.90, both spot and contract. Foundry grades are bringing \$2.15 to \$2.25, spot or contract. Some concerns are endeavoring to work up interest in comparatively new fields by circularizing the trade, and in this way some concessions are offered for limited acceptance.

**Finished Iron and Steel.**—Interests in this market continue to report business excellent in jobbing and warehousing, but there is comparatively little in sight in a structural way. The American Bridge Company has taken the contract for the steel for the Weissinger & Gaubert apartment building in Louisville, at Third street and Broadway, something like 150 tons. Agricultural implement manufacturers in this section are contracting for steel bars, and at the uniform price of 1.45c., Pittsburgh. Iron bars are dull at about 1.55c., Cincinnati mill. Sheet mills in this market are running full and will so continue until July 1. On that date the Newport Rolling Mills will shut down as usual for the annual repairs. No arrangements have been made by the independent mills in conference with the unions for a raise, but a meeting is to be held in Cincinnati district on Tuesday or Wednesday, when it will probably be decided whether or not a strike will be called for June 30. The mills involved in this district are: The N. & G. Taylor Company, Wheeling, W. Va., and Martins' Ferry, Ohio; Follansbee Bros & Co., Follansbee, W. Va.; Pope Tin Plate Company, Steubenville, Ohio; American Rolling Mill Company, Middletown, Ohio; Newport Rolling Mill Company, Newport, Ky.; Carnahan Tin Plate Company, Canton, Ohio; Empire Iron & Steel Company, Niles, Ohio; Youngstown Sheet & Roofing Company, Youngstown National Enameling & Stamping Company, Granite City and East St. Louis; Atlanta Sheet & Tin Plate Company, Atlanta, Ind., and the De Forrest Sheet & Tin Plate Company, Niles, Ohio. Workers in these mills ask a raise of from 6 to 10 per cent.

**Old Material.**—Dealers are not agreed as to the degree of dullness, but all are optimistic on the future, the most conservative opinion expressing a belief that the upward trend in prices is due by September 1. Some melting steel stock is reported thrown on the market from mill cancellations, but the larger dealers are promptly taking in any offerings of this nature. Railroad offerings are liberal so far this month; the Cincinnati, Hamilton & Dayton list of about 150 tons is closed to-day; lists are out from the Chicago & Alton, the Clover Leaf, the Vandalia system and some other and smaller properties. One large dealer in this market who has a tremendous stock in his yards and is still buying, reports business a shade better than the first two weeks in June. Invoicing will occupy the attention of many mills in July and dealers will be called upon to assist in diverting shipments during that period. Inquiries for any kind of old material are very meager. Nominally the market is unchanged, and we quote dealers' prices to the trade, for

delivery in buyers' yards, Cincinnati and southern Ohio, as follows:

No. 1 railroad wrought, net ton.....	\$11.50 to \$12.00
Cast borings, net ton.....	4.00 to 5.00
Heavy melting steel scrap, gross ton...	11.50 to 12.00
Steel turnings, net ton.....	6.50 to 7.50
No. 1 cast scrap, net ton.....	11.00 to 12.00
Burnt scrap, net ton.....	8.00 to 9.00
Old iron axes, net ton.....	16.50 to 17.00
Old iron rails, gross ton.....	17.00 to 17.50
Old steel rails, short, gross ton.....	14.50 to 15.50
Old steel rails, long, gross ton.....	14.50 to 15.50
Relaying rails, 56 lb. and up, gross ton...	22.00 to 23.00
Old car wheels, gross ton.....	13.00 to 13.50
Low phosphorus scrap, gross ton.....	16.00 to 16.50

### St. Louis

ST. LOUIS, June 20, 1910.

**Coke.**—Increased interest is reported by the leading coke sales agencies and some large deals are pending. The sales made range from a few carloads up to 1500 tons, the latter being by-product coke, shipment extending over a year. There is an inquiry out for 4000 tons and one for from 30,000 to 40,000 tons, but this latter comes from outside territory. Prices are firmer. We quote standard brands of 72-hour foundry for prompt shipment at \$2.25; for shipment over a year, \$2.50 per net ton, f.o.b. oven, Connellsville.

**Pig Iron.**—There is a good deal of irregularity. Some sellers report sales and inquiries of fair volume, while others say trade is very quiet. One sale of 1000 tons No. 2 Southern foundry iron is reported, shipment over the last half, and another of 1000 tons Northern iron for the same delivery. A sale of 300 tons Southern foundry and an inquiry for 500 tons charcoal iron are also mentioned, together with numerous small sales and inquiries. The number of anxious sellers has been curtailed. The latter feature is the only one of importance that at present is noticeable. Some improvement appears in the demand, and the railroad situation is brighter. We quote No. 2 Southern foundry iron for shipment over the second half at \$12, Birmingham. It is likely that some sales have been made the past week where offers of less than this price have been accepted for round lots. Southern Ohio is quoted at \$15 to \$15.50 for prompt shipment and \$15.50 to \$16 for deferred shipment, f.o.b. furnace.

**Finished Iron and Steel.**—The leading interest reports having booked a few contracts for standard rails. For lighter rails the demand is limited from coal interests, but better from the lumber companies. There have been some sales of miscellaneous structural material, principally to the Southwest. Quite a good demand is still coming in for iron and steel bars and the calls for shipment on contract are urgent. In track material there is an excellent inquiry, especially for bolts. The general situation is regarded as improving.

**Lead, Spelter, Etc.**—Lead is quiet at 4.22½c. to 4.27c.; spelter is dull at 5c., East St. Louis. Zinc ore is lower and weak at \$38 to \$40 per ton, Joplin base. Tin is down 5c. per 100 lb.; antimony is 5c. per 100 lb. higher, and copper is unchanged. The demand for finished metals the past week was a fair average for the season.

**Old Material.**—Heavy offerings by the local railroads, coupled with a very dull market, brought about some decline in prices, as respects a part of the list. The leading holders consider that demand is merely delayed by various causes, which are common knowledge. In detail, the railroad offerings the past week were as follows: St. Louis & San Francisco, 3000 tons; Mobile & Ohio, 2000 tons; Missouri Pacific, 300 tons; Wabash, 1500 tons; Vandalia, 200 tons. Total, 7000 tons. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails.....	\$15.00 to \$15.50
Old steel rails, rerolling.....	13.50 to 14.00
Old steel rails, less than 8 ft.....	13.50 to 14.00
Relaying rails, standard sections, subject to inspection.....	26.00 to 26.50
Old car wheels.....	15.00 to 15.50
Heavy melting steel scrap.....	12.50 to 13.00
Frogs, switches and guards, cut apart.....	12.50 to 13.00

The following quotations are per net ton:

Iron fish plates.....	14.00 to 14.50
Iron car axles.....	20.50 to 21.00
Steel car axles.....	19.50 to 20.00
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	12.00 to 12.50
Railway springs.....	11.50 to 12.00
Locomotive tires, smooth.....	16.50 to 17.00
No. 1 dealers' forge.....	11.00 to 11.50
Mixed borings.....	4.00 to 5.00
No. 1 busheling.....	11.00 to 11.50
No. 1 boilers cut to sheets and rings.....	9.50 to 10.00
No. 1 cast scrap.....	12.50 to 13.00
Stove plate and light cast scrap.....	9.50 to 10.00
Railroad malleable.....	10.50 to 11.00
Agricultural malleable.....	10.00 to 10.50
Pipes and flues.....	9.25 to 9.75
Railroad sheet and tank scrap.....	8.50 to 9.00
Railroad grate bars.....	9.00 to 9.50
Machine shop turnings.....	8.50 to 9.00

The M. H. Foundry & Mfg. Company of Belleville, Swansea, Ill., has been incorporated with capital of \$5000 by

## THE IRON AND METAL MARKETS

Joseph P. Heeney, August C. Wiechart and Walter Ruediger.

The Marseilles Hydraulic Company, Ottawa, Ill., has been incorporated with capital stock of \$10,000 by Duncan McDougall, C. B. Chapman and Howard H. Bayne, to engage in the development and sale of hydroelectric power for lighting, heating and power.

The Terminal Railway Company will enlarge their Madison (Ill.) freight yards. The capacity of this classification yard is to be increased from 800 to 3200 cars.

Dividend payments on stocks and interest on bonds listed on the St. Louis Stock Exchange, due July 1, will amount to \$5,667,995. This disbursement will result in stimulating business in St. Louis and vicinity.

### Cleveland

CLEVELAND, OHIO, June 21, 1910.

**Iron Ore.**—As there are not cargoes enough for the vessel tonnage in commission, and no indication of an improvement in the lake freight situation within the next few weeks, steps have been taken to curtail the capacity. At a meeting of the independent vessel owners, held June 18, it was decided to send 20 per cent. of their tonnage to the docks for 30 days. This will mean the taking of about 200 carriers temporarily out of commission. Some of these boats have already been laid up and the remainder will go out of commission before the end of the month. It is thought that there will be enough business for the balance of the fleet. The ore movement continues fairly heavy in spite of the fact that many furnace companies are not ready to take their ore. Some ore is being placed on the stock piles at the mines. No sales are reported. We quote prices as follows, per gross ton: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range non-Bessemer, \$4.20; Mesaba non-Bessemer, \$4.

**Pig Iron.**—While the sale of a few good sized lots of foundry iron was reported during the week, the demand in this immediate territory is rather quiet, inquiries not being as plentiful as during the two or three previous weeks. Prices continue weak, with no indications of stiffening up in the near future. Some of the sellers claim they cannot make iron at present prices and are not meeting competition. Complaint is made by furnace companies that do not own their ore supply that interests having ore mines are making the low prices to market their ore, and that it is impossible for furnaces that have to buy their ore to meet this competition. Many consumers have not yet bought for delivery beyond July 1, but a considerable share of these are believed to have overbought for the first half, so that they will have enough iron to last them well into the third quarter. Some foundries have good sized stocks on hand. We note the sale of one lot of about 1000 tons of No. 2 Northern to a local foundry, and a few other local and northern Ohio consumers are feeling the market for lots of that size and under. An Ohio stove works is in the market for 1000 tons, part Northern and Southern. The sale of considerable tonnage of foundry iron is reported to Erie, Pa., manufacturing plants. For prompt delivery and through the balance of the year we quote No. 2 foundry at \$14.50 to \$14.75, Valley furnace. Southern iron is fairly firm at \$11.75, Birmingham, for prompt shipment, and \$12 for the last half. The Pittsburgh manufacturer of plumbers' goods who had an inquiry out for 2000 tons of Southern for the last half is understood to have received no quotation below \$12 for No. 2, and is still looking for a lower price. For prompt shipment and for the last half we quote, delivered, Cleveland, as follows:

Bessemer .....	\$16.65 to \$16.90
Northern foundry, No. 1 .....	15.75 to 16.25
Northern foundry, No. 2 .....	15.25 to 15.75
Northern foundry, No. 3 .....	14.75 to 15.25
Gray forge .....	15.40
Southern foundry, No. 2 .....	16.10 to 16.35
Jackson Co. silvery, 8 per cent. silicon ..	20.00 to 20.50

**Coke.**—A number of consumers of foundry coke who had not previously covered for their last half requirements came into the market during the week and closed contracts for that delivery. There is also some inquiry for foundry grades for delivery running through an entire year. The market is firm. We quote standard Connellsville furnace coke at \$1.65 to \$1.75 per net ton, at oven, for spot shipment, and \$1.80 to \$1.90 for the last half. Connellsville 72-hour foundry coke is held at \$2.25 for spot shipment and \$2.30 to \$2.50 for the last half.

**Finished Iron and Steel.**—The general demand is less active than for some time, both specifications and current orders having fallen off. The demand for steel bars is holding up fairly well, but deliveries have eased up somewhat. Some bar consumers overbought for the first half and have had their contracts extended to October 1. Other buyers who have contracts at prices under those now prevailing

have been notified that the unfilled portion of these contracts will be canceled on expiration, July 1. Steel bars are firm, at 1.45c., Pittsburgh. The demand for iron bars is light and prices continue weak. Very few orders are coming from the railroads. We quote iron bars at 1.45c., at mill, but local mills are shading this to meet competition in outside business. The two local bar iron mills will shut down July 1. When they will start up again will depend on business conditions. The demand for plates and structural material is light and the mills are looking for specifications. Orders are mostly for small lots. Reports indicate that boiler shops in this territory are not very busy. The general quotation on plates is still 1.50c., Pittsburgh, although some of the smaller mills are quoting 1.45c. Structural material is firm, at 1.50c., Pittsburgh. Contracts for the plain material for some of the work recently taken here have not yet been placed, and it is believed that buyers are holding off in the hope of getting price concessions. The new plant to be erected by the National Carbon Company at Niagara Falls will require 1000 tons. Other structural work for which contracts will be placed shortly include a building for the Lima Locomotive & Machine Company, Lima, Ohio, and a plant for the Canton Sheet Steel Company, Canton, Ohio. The smaller local fabricating shops are well filled with work. The demand for sheets continues light and prices are very weak. Concessions as large as \$4 a ton are reported on both black and galvanized. The demand for shafting is holding up well. Warehouse business with jobbers continues good.

**Old Material.**—The market continues very dull and prices generally are weaker. Absence of transactions, however, makes most quotations largely nominal. About the only demand is for car lots to fill out. Little demand is expected during the next few weeks, as a number of mills will shut down June 30 for repairs and inventory. While dealers think the bottom of the market has been reached consumers believe that prices will go lower. The only late railroad list is from the Nickel Plate, which received bids June 21 for about its usual tonnage. Dealers' prices, per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails .....	\$14.50 to \$15.00
Old iron rails .....	17.00 to 17.50
Steel car axles .....	21.00 to 21.50
Heavy melting steel .....	13.25 to 13.75
Old car wheels .....	14.00 to 14.50
Relaying rails, 50 lb. and over .....	22.50 to 23.50
Agricultural malleable .....	12.00 to 12.50
Railroad malleable .....	13.50 to 14.00
Light bundled sheet scrap .....	9.75 to 10.25

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles .....	\$21.50 to \$22.00
Cast borings .....	6.00 to 6.50
Iron and steel turnings and drillings ..	7.00 to 7.50
Steel axle turnings .....	9.50 to 10.00
No. 1 bushelling .....	12.00 to 12.50
No. 1 railroad wrought .....	14.00 to 14.50
No. 1 cast .....	12.50 to 13.00
Stove plate .....	11.00 to 11.50
Bundled tin scrap .....	11.00 to 11.50

### The German Iron Market

BERLIN, June 9, 1910.—The situation in the iron trade has hardly grown worse during the past two weeks. The works are well employed, and most of them have orders on hand that will keep them busy for two to three months. There has apparently been no further weakening in the general price situation since the last report. At last week's trading on the Düsseldorf Exchange, English foundry No. 3 was quoted at 71 to 72 marks, delivered at Ruhrort, which compares with a previous price of 72 to 73 marks; and this was the only change in the entire list. One of the best factors in the general situation is the prospect that the great lockout in the building trades will be settled within a few days and building operations be resumed on a large scale by the middle of the month. This will mean better employment for the mills running on beams, whose orders were running low. The bar section of the trade had also been pretty hard hit by the lockout, but latterly dealers have been laying in new stock in order to be ready to meet the heavier demand expected as soon as it has terminated.

That the general situation remains pretty strong is indicated by the continued heavy production of pig iron, the make of which in May established another high record, at 1,261,735 tons. This beats March, the previous record month, by about 11,500 tons, and May, 1909, by 97,000 tons. So far as pig iron prices are concerned, there is much complaint that the independent furnaces are operating at a loss owing to the relatively high ore prices and the low prices of pig under the present system of unrestricted competition. The furnaces have again been conferring with a view to reorganizing the trade, and it was reported about the beginning of the month that there was a good prospect that the negotiations would lead to a combination. It was even agreed among them to take no order for the rest of this month that extended beyond the end of the year.



## THE IRON AND METAL MARKETS

Several days ago, however, a meeting of the furnacemen was held at Cologne, but it quickly adjourned without any positive result, owing to the fact that the Niederrheinische Hütte made excessive demands in the way of allotments. This concern, up to several years ago a quite insignificant establishment, was reorganized, greatly enlarged and modernized by Prince Henckel von Donnersmarck, the chief owner of the Krafft Works near Stettin. Now that its producing capacity has been so greatly expanded it will not readily enter a combination that would necessarily have to restrict its output sharply. Hence it seems that the Niederrheinische establishment will continue to play the part of the Krafft furnaces, which have been the greatest disturber of the pig iron trade for several years. It may be recalled by readers of this correspondence that it was the Niederrheinische concern which last year caused the dissolution of the chief pig iron syndicate of the country by giving notice of its withdrawal. This establishment has this year produced nothing short of a revolution in the ferromanganese market. That product had been commanding a price of 165 to 170 marks per ton, but the Niederrheinische began to make it and soon beat down the price to 145 to 150 marks. The other makers tried to induce Prince Donnersmarck to enter their rather loose trade combination, but he split with them in this case also on the ground that the allotment offered was far too low. It is reported that his establishment has already sold threefold the amount of the proposed allotment and it is taking contracts for two years ahead.

This week it is mentioned that an American order for 15,000 tons of spiegeleisen containing 20 per cent. manganese is in the market seeking takers. It is intimated that the price stipulated by the Americans is so low as to render it difficult to do business. This is all the more true inasmuch as the Coal Syndicate is considering a proposal to add 2 marks to the price of coke. A meeting of the syndicate will be held next month for the purpose of acting upon this motion. The advance is proposed to take effect October 1. The furnaces are greatly agitated over the matter, but they regard the advance as so absurd under the circumstances that the syndicate will refuse to adopt it. It is reported that the foreign demand for German pig has perceptibly fallen off of late in view of the lower prices ruling in England. Nevertheless, the exports in May were still very large, reaching about 70,000 tons, comparing with 35,245 tons for May, 1909.

The ore market remains firm. Heavy orders have been placed in the Siegerland region since the second half year's business was begun at unchanged prices. Swedish ores rose another mark or two per ton in the past month. It is reported that the Swedish producers have sold out their entire product as far ahead as 1913, and are declining to take further orders. In the Silesian district, the furnaces are growing more and more dependent upon foreign ores owing to the decline in the output of the mines of that region. The production there was only 233,400 tons last year, which compares with 407,000 tons in 1909; whereas the requirements of the furnaces amount to 1,300,000 tons a year. Germany's imports of ores in May amounted to 811,922 tons, as against 789,815 tons in May, 1909.

In waste and scrap iron the downward tendency of prices has been checked, but the trade is quiet. In half manufactured steel good sales have been made for the next quarter, and some supplementary buying has been going on. Export business, however, especially for more remote dates, has grown more difficult. There is a better demand for grooved rails, as well as for rails used in mines, but the home business in heavy rails remains quite unsatisfactory, while the export trade is pretty good. The mills running on bars continue to enjoy a good run of business. The increased use of bars in connection with concrete building is bringing much new business to the mills, but it is hurting the trade in heavier structural forms. Heavy plates continue in good demand; the shipbuilding industry in particular is sending in good orders. The situation in respect to finer plates has further weakened. There has been a break of prices in black sheets for tinning.

The locomotive shops of the country are not doing a satisfactory business. It is reported that the number of workmen employed is only 75 to 80 per cent. of the number employed last year. Home railroads are ordering sparingly, while competition from foreign makers has become so keen that orders from abroad can only be taken at unremunerative prices. The shops are expected to pay lower dividends this year.

### Buffalo

BUFFALO, N. Y., June 21, 1910.

**Pig Iron.**—The market for Buffalo territory has been somewhat quieter the past week than for the preceding week; consumers as a rule show less active interest in new contracts. A moderate volume of inquiry continues to come in from New England and New York City and vicinity, and

an aggregate tonnage of foundry grades reported as about 20,000 tons has been closed, with 8000 to 10,000 tons under negotiation, including 1000 tons No. 2 X foundry with an interest on the upper Hudson and 2000 tons with a New England concern. Several inquiries are out also from the International Pump Company. It is understood that the International Harvester Company has closed for about 9000 tons of malleable for its Auburn works. There has been some increase in inquiry for basic, aggregating between 10,000 and 15,000 tons, particularly for fourth quarter delivery, and it is understood that prices a little under \$15.50 have been made; but orders have not yet been placed. The general feeling among furnacemen appears to be one of increasing hopefulness. Prices are reported as not varying materially from last week's schedule, so far as Buffalo furnaces are concerned, although it is believed that business has been taken by interests in the districts at a delivered price which, reduced to a Buffalo basis, would be somewhat lower than shown in the schedule given below, which represents as closely as possible the current market for prompt and last half shipments, per gross ton, f.o.b. Buffalo:

No. 1 X foundry.....	\$16.00 to \$16.50
No. 2 X foundry.....	15.50 to 16.00
No. 2 plain.....	15.25 to 15.75
No. 3 foundry.....	15.00 to 15.50
Gray forge.....	15.00 to 15.50
Malleable.....	15.75 to 16.25
Basic.....	15.25 to 15.75
Charcoal.....	19.25 to 19.75

**Finished Iron and Steel.**—The tone of the market is strong with good miscellaneous inquiry for bar products and a large total of orders. Steel bar prices hold very firm at 1.45c., Pittsburgh, with absolutely no shading below this, and shapes at 1.55c., with a minimum of 1.50c. for very desirable business. The Canadian export trade continues good in bar products and for structural material. The agency of the leading interest reports the closing of a large contract for hoop iron during the week; also that a good tonnage of structural material is being placed for new buildings in Toronto and at other points. Locally the demand for fabricated material continues active and a number of small jobs running from 50 to 150 tons are being figured. Bids are being taken for steel for Saint Anne's Academy building, Hornell, N. Y., 275 tons, and for the National Carbon Company's factory buildings, Niagara Falls, requiring a considerable tonnage. Bids will be opened June 24 for the 300 tons of structural steel and a quantity of reinforcing bars for the Niagara Machine & Tool Company's plant, this city, and June 27 for 650 tons of steel for gate work for the United States ship canal lock in Black Rock harbor, Buffalo. The Charles F. Ernst Son's Iron Works has received a contract for steel, about 100 tons, for the John W. Gibbs garage building, Buffalo.

**Old Material.**—The demand continues exceedingly light for all classes of material, consumers still preserving a waiting attitude. Material arriving on track, which dealers desire to get rid of at slight concessions, rather than put in stock, takes care in the main of such demand as there is. Shipments on contract are being held off to some extent by the mills, and there are no indications of much activity during the summer months. Prices are unchanged and nominal, as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel.....	\$13.50 to \$14.00
Low phosphorus steel.....	18.50 to 19.00
No. 1 railroad wrought.....	15.50 to 16.00
No. 1 railroad and machinery cast scrap.....	14.50 to 15.00
Old steel axles.....	18.00 to 18.50
Old iron axles.....	22.75 to 23.25
Old car wheels.....	15.00 to 15.50
Railroad malleable.....	15.00 to 15.50
Boiler plate.....	12.00 to 12.50
Locomotive grate bars.....	11.50 to 12.00
Pipe.....	11.50 to 12.00
Wrought iron and soft steel turnings.....	7.25 to 7.75
Clean cast borings.....	6.00 to 6.50
No. 1 busheling scrap.....	12.50 to 13.00

### New York

NEW YORK, June 22, 1910.

**Pig Iron.**—Buying of foundry iron in this district has fallen off in the past week, though several consumers are still in the market. Prices are practically unchanged. It is certain that no greater firmness exists and the tendency is to further softening. A soil pipe interest has inquired in the past week for 5000 tons for its plants in the South and one in Indiana. Some scattering inquiry has come up for malleable Bessemer, both in eastern Pennsylvania and in New England. Several foundries in New Jersey have asked for prices on lots of a few hundred tons each, and one large interest, which was reported to be in the market last week for 3000 tons, has reduced its inquiry to 2000 tons. Northern furnaces seem to be getting the bulk of present business, Southern producers being unwilling to name their lowest recent prices for delivery throughout the year, although \$11.50, Birmingham, for No. 2, is readily available on third

# THE IRON AND METAL MARKETS

quarter delivery. There is some activity in basic iron, after a long interval of quietness. A New Jersey steel foundry has been in the market for 2000 tons of basic, a portion of which has been bought. In eastern Pennsylvania one steel company has inquired for 4500 tons of basic. A round sale of basic, supposed to have been made about three weeks ago, has been made public this week, and this is the foundation evidently for the report that an eastern Pennsylvania plate mill has just bought 12,000 tons, whereas this particular interest has not taken a ton of new iron. It is evident that \$15.75, delivered in eastern Pennsylvania, and possibly lower, could now be done on basic. We quote Northern foundry iron at tidewater as follows: No. 1, \$16.75 to \$17; No. 2 X, \$16.50 to \$16.75; No. 2 plain, \$16 to \$16.25. Southern iron is quoted at \$16.50 to \$16.75 for No. 1 and \$16 to \$16.25 for No. 2.

**Steel Rails.**—The Bangor & Aroostook Railroad, which has been in the market for some weeks, has placed 5000 tons with the Pennsylvania Steel Company. The latter has also booked 1000 tons for trolley line construction in Connecticut. The Illinois Steel Company reports 6000 tons closed in the past week, including an order from one road for 5250 tons of open hearth rails. The Tennessee Company booked 900 tons and the Carnegie Steel Company 1200 tons, including 500 tons for the Wabash Terminal at Pittsburgh. The Chicago, Peoria & St. Louis has placed 1200 tons with the Lackawanna Steel Company.

**Cast Iron Pipe.**—Bids will be opened July 6 by the New York City government for two lots of pipe, one of 3200 tons, chiefly 20-in. pipe, and another of about 400 tons of 36-in. and 48-in. pipe, a portion being for high pressure service. The Bronx will require considerable pipe, on which bids will be taken later. In general, the demand is very light and indications point to a quiet summer. We quote \$25 to \$25.50 per net ton, tidewater, for carload lots of 6-in. pipe.

**Old Material.**—The scrap market is in extremely bad shape and there has been a general regrading of prices downward about 50c. a ton on nearly all kinds. The report that another large combine had been formed to purchase its scrap through the agent of the existing combine seems to be generally accepted. This will tend to hold the market down. The revised quotations per gross ton, New York and vicinity, are as follows:

Rerolling rails.....	\$12.00 to \$12.50
Old girder and T rails for melting....	11.50 to 12.00
Heavy melting steel scrap.....	11.50 to 12.00
Relaying rails.....	20.00 to 21.00
Standard hammered iron car axles.....	22.00 to 22.50
Old steel car axles.....	17.50 to 18.00
No. 1 railroad wrought.....	13.50 to 14.00
Wrought iron track scrap.....	12.00 to 12.50
No. 1 yard wrought, long.....	12.00 to 12.50
No. 1 yard wrought, short.....	11.50 to 12.00
Light iron.....	6.00 to 6.50
Cast borings.....	6.50 to 7.00
Wrought turnings.....	7.00 to 7.50
Wrought pipe.....	12.00 to 12.50
Old car wheels.....	12.00 to 12.50
No. 1 heavy cast, broken up.....	12.00 to 12.50
Stove plate.....	9.00 to 9.50
Locomotive grate bars.....	9.00 to 9.50
Malleable cast.....	12.00 to 12.50

**Finished Iron and Steel.**—Generally the feeling is that improvement has set in; that buyers have concluded that prices are as low as they will go, and that they will have to place contracts soon. Conditions are considered better now than they have been for two months. The business done, though conspicuous for the lack of large lots, aggregates a good tonnage, and June seems certain to be a big month. Those who have blanket contracts are receiving specifications liberally. The local plate business has been fair, but at present several consuming shops are having strikes. Deliveries are very prompt; standard goods can be delivered in a week in most cases. The low bidder on the 59,000 tons of plates for the Panama lock gates was the McClintic-Marshall Construction Company. The concessions on plates that are rumored do not concern this territory as the business done is in too small lots to demand concessions, in fact, is claimed to be going above even the regular market quotation. Iron bar business is quiet. The steel bar business is better and the deliveries still far behind. Nothing of moment in structural materials was closed in New York City last week. There is an apartment house, however, in the market at Broadway and Ninety-eighth street which will require 1200 tons, and a prospect of 1500 to 1600 tons for an office building at John and Dutch streets, for which the Thompson-Starrett Company is the general contractor. The railroads have done relatively little since the last report in bridge lettings. The Central New England gave 200 tons to Lewis F. Shoemaker & Co., and the Boston & Maine 300 tons to the Phoenix Bridge Company and 200 tons to the American Bridge Company. The latter also obtained 300 tons from the Frisco Lines. Bids have been asked on 3000 tons for bridge work on the New York Central Lines, and 500 tons for the Chicago, Milwaukee & St. Paul. In structural work

the American Bridge Company has received 250 tons for a building for the Crane Company at Salt Lake City; a school, 150 tons, at Denver; two bridges at Texas City, 400 tons. Bids closed June 15 on 800 tons for the Richmond Trust Company building at Richmond, Va. Prices remain unchanged. Plain structural material and plates are quoted at 1.61c. to 1.66c.; steel bars at 1.61c., and bar iron at 1.50c. to 1.55c., all New York.

Nash, Isham & Co., pig iron dealers, have removed their offices to Rooms 1409-10 in the new Liberty Tower Building, 55 Liberty street, New York.

## Metal Market

NEW YORK, June 22, 1910.

### THE WEEK'S PRICES

Cents Per Pound.

	Copper.		Lead.		Spelter.	
	Lake.	Electro-lytic.	New York.	St. Louis.	New York.	St. Louis.
June 16.....	12.87½	12.50	32.47½	4.37½ 4.22½	5.15	5.00
17.....	12.87½	12.50	32.60	4.37½ 4.22½	5.15	5.00
18.....	12.75	12.50	32.75	4.37½ 4.22½	5.15	5.00
20.....	12.75	12.50	32.70	4.37½ 4.22½	5.15	5.00
21.....	12.75	12.50	32.60	4.37½ 4.22½	5.15	5.00
22.....	12.75	12.50				

Sales of copper during the week have been heavy, amounting to no less than 20,000,000 lb. Pig tin is dull. There has been an advance in the price of foreign tin plates. The demand for lead is better and the market has strengthened. Spelter is being held fairly firm.

**Copper.**—There have been heavy sales of electrolytic copper, both for domestic consumption and export. It is certain that more than 20,000,000 lb. of metal changed hands and about 10,000,000 lb. of this was sold for export. If consumers of copper had made careful plans to make heavy purchases at low prices they could not have acted in concert to better advantage than they did during the week, as many of them succeeded in getting their requirements filled at prices as low as 12.37½c. Regardless of the heavy buying, sellers were unable to pyramid prices to any great extent, and although some of the leading sellers advanced quotations to a point that practically put them out of the market, there were outsiders who had plenty of stock on hand and were willing to dispose of it at prices ranging from 12.37½c. to 12.62½c. As far as the sellers are concerned the market has been disorganized all week and consumers have been shopping about and placing orders here and there to good advantage. Some of the sellers claim that the consumers have only supplied their immediate needs, and they declare that they will be able to dispose of large amounts of stock at better prices than now prevail. Very little interest is being taken in Lake copper, and the United Metals Selling Company is practically out of the market as regards taking orders on this grade. It is asking 13.25c., but it is certain that Lake copper can be bought in New York at 12.75c. The exports of copper continue very light, and so far this month only 12,954 tons have been sent abroad. The imports of copper during the first 21 days of the month about equaled the exports, but the London market has strengthened as a result of the buying movement here, and it is thought shipments from abroad will fall off. It is stated in the trade that the heavy imports of copper are unprecedented, and taken in connection with the light exports, emphasize again the fact that statistical developments are very much in favor of the consumer. In London to-day the market was easy. Spot copper closed at £54 13s. 9d. and futures sold at £55 7s. 6d. The sales were 700 tons of spot copper and 900 tons of futures.

**Pig Tin.**—Pig tin is dull and uninteresting. There was only one good buying day during the last week and that was on June 16, when from 150 to 200 lb. of metal was sold. This business was done chiefly between dealers. The daily prices quoted above are more or less nominal and the gradual advance from June 17 to June 21 was largely due to the optimistic tone of the London market, which has recovered somewhat from the stagnant condition of two weeks ago. The London market closed to-day with spot tin selling at £148 and futures at £148 17s. 6d. The market was steady and the sales were 320 tons of spot and 260 tons of futures. Pig tin was sold in New York this afternoon at 32.60c.

**Tin Plates.**—The price of foreign tin plates advanced during the week to 13s. 4½d. at Swansea. This is an advance of 1½d. and it is caused, it is stated, by the heavy demand for tin plates in Great Britain. American can manufacturers who buy tin plates for re-export are also good buyers at this time, and it is said in some quarters that the market for tin plates will go higher. The market for domestic tin plates is good and consumers are able to get better delivery terms. The prevailing price is \$3.84 for 100-lb. coke plates.

**Lead.**—Lead has strengthened somewhat, and outside sellers are gradually advancing the metal to the price de-



# THE IRON AND METAL MARKETS

manded by the American Smelting & Refining Company, which is 4.40c., New York. The delayed spring buying movement in lead is here, but orders are not coming in in so large a volume as was anticipated. An indication that the market is stronger is contained in the action of some prominent independent sellers who have forwarded their price  $2\frac{1}{2}$  points to equal that of the American Smelting & Refining Company, and are holding their stocks firm at that quotation. There are a number of outside traders, however, who are willing to take 4.37 $\frac{1}{2}$ c., New York, and as there is enough of the metal offered at that price to supply all the inquiries now before the trade that figure should be considered the average quotation.

**Spelter.**—The future of spelter is uncertain. Although consumers are taking but very little of the metal the sellers are holding firm, and they declare that with ore costing them \$40 spelter is cheap at 5.15c., New York. There has been a noticeable falling off in the demand for spelter from the galvanizing and brass trades and it is known that stocks have increased considerably. There is very little spelter in New York, however, and most of the sellers are booking what few orders come before them at prices on board cars at East St. Louis. It was reported early in the week that the metal had been sold at below 5c. in St. Louis, but the sales, if any, consisted of some small holdings offered at re-sale. The nominal price of spelter is 5.15c., New York, and 5c., St. Louis.

**Antimony.**—Large quantities of Chinese antimony are being offered in this market at 7 $\frac{1}{2}$ c., but as the quality of the metal is not known to the general manufacturing trade, very little interest is being taken in it. As a matter of fact, the market in lower grades of antimony is stagnant, and the New York price for Cookson's is 8.37 $\frac{1}{2}$ c. and Hallett's is 8.12 $\frac{1}{2}$ c. It is very probable that these quotations would be shaded if a good sized order were in sight.

**Old Metals.**—The market is steady but dealers' selling prices are lower, as follows:

	Cents
Copper, heavy cut and crucible.....	12.00 to 12.25
Copper, heavy and wire.....	11.75 to 12.00
Copper, light and bottoms.....	10.75 to 11.00
Brass, heavy.....	8.50 to 8.75
Brass, light.....	7.00 to 7.25
Heavy machine composition.....	11.00 to 11.25
Clean brass turnings.....	7.50 to 8.00
Composition turnings.....	9.25 to 9.50
Lead, heavy.....	4.05 to 4.20
Lead, tea.....	3.80 to 3.95
Zinc scrap.....	4.25 to 4.50

## Labor Notes

A settlement has been made at Cincinnati of the demand made by Locals 4 and 20 of the International Molders' Union of North America, and after January 1, 1911, coremakers and bench and floor molders will all be on the basis of \$3.25 per day. The agreement, which is effective from Monday, June 20, raises coremakers from \$2.75, the present wage, to \$3, until the first of the year, when all will be put on a \$3.25 basis in an 18 months' contract.

The Stark Rolling Mill Company, Canton, Ohio, has put its sheet mill scale of wages pertaining to tonnage products on the same basis as announced some time ago by the American Sheet & Tin Plate Company. The company has advanced the rate paid for rolling its Toncan metal sheets, since it is not possible for the men to get out as large a tonnage of Toncan metal as can be produced in steel.

The Hawley roads are inquiring for 5750 freight cars. This includes 750 box cars on an inquiry from the Toledo, St. Louis & Western, issued some time ago. The Chicago & Alton has now inquired for 3000 box cars, 250 furniture cars, 250 automobile cars and 250 stock cars. The Iowa Central is on the list for 500 box cars and the Minneapolis & St. Louis for 750. The stock cars for the Alton will be of wood construction, but on all the others steel underframes are specified.

N. L. Palmer, for several years connected with the Columbus Forge & Iron Company, Columbus, Ohio, has recently been appointed superintendent of the drop

## Iron and Industrial Stocks

NEW YORK, June 22, 1910.

The stock market appears to be awaiting developments. The passage of the railway rate bill was fully discounted and it has now practically disappeared as a stock market factor. The Western banking situation is having some attention, together with the possibilities of the long continued speculation in Western lands. Transactions have ranged between 200,000 and 400,000 shares a day in the past week, and there are no indications of increasing activity. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com..	8 $\frac{1}{2}$ -9 $\frac{1}{2}$	Railway Spr., com..	33 $\frac{1}{2}$ -34 $\frac{1}{2}$
Allis-Chalm., pref..	30-31	Railway Spr., pref..	101-101 $\frac{1}{2}$
Can. com.....	8 $\frac{1}{2}$ -9 $\frac{1}{2}$	Republic, com.....	30 $\frac{1}{2}$ -31 $\frac{1}{2}$
Can. pref.....	70 $\frac{1}{2}$ -71 $\frac{1}{2}$	Republic, pref.....	94 $\frac{1}{2}$ -95 $\frac{1}{2}$
Car & Fdry, com..	54 $\frac{1}{2}$ -55 $\frac{1}{2}$	Sloss, com.....	35 $\frac{1}{2}$ -36 $\frac{1}{2}$
Car & Fdry, pref..	114-115	Sloss, pref.....	60-71 $\frac{1}{2}$
Steel Foundries....	54-56	Pipe, com.....	19
Colorado Fuel....	34 $\frac{1}{2}$ -35 $\frac{1}{2}$	U. S. Steel, com.....	76 $\frac{1}{2}$ -79
General Electric....	145 $\frac{1}{2}$ -147 $\frac{1}{2}$	U. S. Steel, pref..	115 $\frac{1}{2}$ -116 $\frac{1}{2}$
Gr. N. ore cert....	50-61 $\frac{1}{2}$	Westinghouse Elec.	61-66 $\frac{1}{2}$
Int. Harv., com..	98 $\frac{1}{2}$ -100	Am. Ship, com.....	82
Int. Harv., pref..	120-121	Chl. Pneu. Tool....	39 $\frac{1}{2}$ -40
Int. Pump, com..	44 $\frac{1}{2}$ -45 $\frac{1}{2}$	Cambria Steel....	45-45 $\frac{1}{2}$
Int. Pump, pref..	82 $\frac{1}{2}$ -83 $\frac{1}{2}$	Lake Sup. Corp....	22-22 $\frac{1}{2}$
Locomotive, com..	43-44 $\frac{1}{2}$	Pa. Steel, pref....	105 $\frac{1}{2}$ -105 $\frac{1}{2}$
Locomotive, pref..	107 $\frac{1}{2}$ -107 $\frac{1}{2}$	Warwick.....	10 $\frac{1}{2}$ -10 $\frac{1}{2}$
Nat. En. & St., com..	18	Crucible St., com..	12 $\frac{1}{2}$ -14
Pressed St., com..	34 $\frac{1}{2}$ -35 $\frac{1}{2}$	Crucible St., pref..	86 $\frac{1}{2}$ -91 $\frac{1}{2}$
Pressed St., pref..	96	Harb. W. Ref., com.....	33

**Dividends.**—The Otis Elevator Company has declared the regular quarterly dividend of \$1.50 a share on the preferred stock, payable July 15.

The Canadian General Electric Company, Ltd., has declared the regular quarterly dividend of 1 $\frac{1}{4}$  per cent. on the common stock, payable July 1.

The American Shipbuilding Company has declared the regular quarterly dividend of 1 $\frac{1}{4}$  per cent. on the preferred stock, payable July 15.

The Standard Screw Company has declared a semiannual dividend of 3 per cent. on both the common and preferred stocks, payable July 1.

The Westinghouse Air Brake Company has declared the regular quarterly dividend of 2 $\frac{1}{2}$  per cent., an extra dividend of 1 $\frac{1}{2}$  per cent. and a special dividend of 2 per cent., payable July 9, making a total of 20 per cent. for the fiscal year.

forging department of the Diamond Forge & Mfg. Company, N. S., Pittsburgh. R. J. Long, who was in the employ of the Pittsburgh Tubular Steel Whiffletree Company for 12 years, is now in charge of the whiffletree department of the Diamond company. This concern reports a larger volume of business in the manufacture of whiffletrees than ever before. It is also manufacturing a line of drop forgings for automobiles, &c.

**New \$1,000,000 Tool Works at St. Louis.**—The Fayette R. Plumb Company, Philadelphia, has awarded the contract to John G. Brown, Philadelphia, for the construction of its \$1,000,000 tool plant at St. Louis. It will consist of 16 buildings, containing about 78,000 sq. ft. of floor space. Thirteen buildings will be devoted to manufacturing purposes and in addition there will be an office building and chemical laboratory, a service building and power house and machine shop. Brick and reinforced concrete construction will be used throughout. Employment will be given to 400 skilled workmen.

Among changes in the blast furnace list thus far in June are the blowing in of one Duquesne Furnace by the Carnegie Steel Company; the blowing out of Ella Furnace, West Middlesex, Pa., June 13; the blowing in of one North Birmingham Furnace of the Sloss-Sheffield Steel & Iron Company, June 1; the blowing out last week of Furnace B of the Federal Furnace Company, South Chicago, for repairs; and the blowing in of the Martin's Ferry Furnace of the Wheeling Steel & Iron Company; one New Castle Furnace of the Carnegie Steel Company, and No. 2 Niagara stack at North Tonawanda, N. Y.

## Canadian Branch Industries

### More American Manufacturers Negotiating for Sites

TORONTO, June 18, 1910.—Evidently not all the American manufacturers who are interested in the Canadian market have high expectations of the outcome of the reciprocity bargaining Canada and the United States are soon to enter upon. If they looked forward to a material reduction of the Canadian duties on their products, few of them would be entertaining the idea of establishing branch factories in this country. But there was never more inquiry or negotiation for Canadian sites for American industrial works than at present. Practically every important Canadian center convenient to the boundary line has some proposal under consideration for the establishing of an American manufacturing plant within its bounds or adjacent thereto. More than that, the proposals are more frequently than ever before the well considered schemes of substantial interests. Hamilton, as already mentioned, has secured the Canadian works of a large American plow company, and now it is announced that the National Fireproofing Company will erect, under a Canadian charter, a \$1,000,000 plant in that city.

On June 15 the ratepayers of Port Arthur are to vote on a by-law authorizing the city to guarantee a bond issue of a company proposing to establish works for the manufacture of steel barrels and enamel ware on a considerable scale. It is represented that persons connected with the Iron Clad Mfg. Company across the line will be prominent in the Canadian company's affairs. Two hundred men are to be employed steadily for 250 days of every year. The city is to guarantee bonds for half the amount expended on the works, but it is not to do so until \$300,000 of the company's capital has been laid out in construction.

American enterprise under this head seems to keep pace with the movement of American emigration to Canada. It is noteworthy that most of the offshoots of United States industries that it is proposed to plant in Canada, or that have been planted in Canada within recent years, are attracted by demand from the western provinces, where population and wealth production are growing rapidly.

#### American vs. British Steel Products in Canada

Customs duties and high transportation charges, whether jointly or severally, are more restrictive of British trade in Canada than of American trade, and more is heard of late of projected branches in Canada of British works. Of course, the main restraint upon British exportation to Canada is the ocean freight charge. This is declared to be in many cases all but prohibitive. Take tin plate as an example. In 1908 the Bristol Conference Lines' through rate on tin plate shipped from South Wales to Winnipeg was 58 shillings per gross ton, or 63¼ cents per 100 lb. In 1909 it was advanced to 64 shillings 6 pence per gross ton, which is 70½ cents per 100 lb. For 1910 the rate is 68 shillings per gross ton, or 74½ cents per 100 lb. These, too, are summer rates, when the water carriers compete with the railroads from Montreal to the head of the lakes.

On the other hand, tin plate from Pittsburgh comes into Canada at freight rates slightly lower than those ruling last year. As tin plate is on the Canadian free list there is no tariff advantage in favor of Britain. Ocean insurance, too, adds 2 cents a box, which has to be paid on imports of British tin plate and not on imports of American. Altogether the transportation addition to the cost of importing British tin plate has been brought up to about 12 cents a box within the last three years.

In the fiscal year ending March 31, 1909, the imports of tin plates and sheets from the United King-

dom were of a total value of \$1,199,358, and from the United States \$482,948. In the fiscal year ended with March last the values were as follows: \$1,639,170 for tin plates from the United Kingdom and \$764,420 from the United States. Britain's export trade with Canada in many other lines is similarly restricted by ocean freight rates and United States export trade hitherto correspondingly benefited in several of these lines.

Pig iron, however, is an article in the sale of which the British have been gaining ground in Canada. In the fiscal year 1909 the Canadian imports of pig iron from the United Kingdom amounted to 27,677 tons. The imports of pig iron from the United States in that year amounted to 26,234 tons. But in the last fiscal year the imports of British pig iron came to 101,424 tons, and the imports of American pig iron came to 57,912 tons. Thus the imports of pig iron the last fiscal year were more than threefold of those of the fiscal year immediately preceding, those from the United Kingdom being almost quadrupled and those from the United States rather more than doubled. Most of the pig iron now made in Canada goes into steel, and the imports for foundry consumption are rapidly increasing. This spring two vessels came loaded with pig iron all the way from Newcastle-on-Tyne to the harbor of Toronto, the vessels carrying the cargo being built in British yards, and delivered to Canadian lake transportation interests in this manner.

#### The Canadian Steel Corporation

A charter has been issued by the Department of State at Ottawa to the Canadian Steel Corporation of Hamilton with a capital stock of \$25,000,000, of which \$10,000,000 is to be preferred stock. The incorporators are C. S. Wilcox, C. A. Birge, Robert Hobson, Lloyd Harris, M. P., and H. S. Holt. The first three are Hamilton men, connected with the Hamilton Steel & Iron Company and the Canada Screw Company, which, along with the Canada Bolt & Nut Company of Toronto, and the Montreal Rolling Mills Company, are to be absorbed in the new corporation. The name, "the Canada Steel Corporation," by which this merger is to be known, was also adopted by the greater company in which the Dominion Iron & Steel Company and the Dominion Coal Company are to be merged. A charter giving it this name was recently granted by the Legislature of Nova Scotia. But the company that obtains from the Federal authority a title in which the word "Dominion" or the word "Canadian" appears is supposed to have some advantage as to such a name over a corporation to which the same style has been given by a provincial Legislature. Material for the works of the other concerns in the amalgamation is to be made at the plant of the Hamilton Steel & Iron Company, which has plans to build an additional blast furnace and a steel rod mill.

#### Competition in Wire

It is stated that a company has been organized under the auspices of the Dominion Steel Company to erect plants for the manufacture of wire, wire nails and other wire products. This step is said to be taken as a consequence of the new merger centering about the Hamilton Steel & Iron Company, into which have been drawn some of the wire-drawing and wire-consuming plants, whose wants will doubtless be supplied by the new rod mill to be built in connection with the Hamilton Steel & Iron Company's works.

C. A. C. J.

The American Hoist & Mfg. Company has been organized at Hamburg, Pa., and has purchased the plant and patents of the Hamburg Mfg. Company. It will erect a new plant for the manufacture of hoists and other machinery, the location for which has not yet been decided upon. H. J. Schmick is president; R. C. Hoffman, treasurer, and Joseph Johnson, secretary.



## The Gas Engine Convention at Cincinnati

The annual meeting of the National Gas and Gasoline Engine Trades Association of 1910 will be held in Racine, Wis., early in December. This was decided at the semiannual gathering in Cincinnati, June 13-16. In the meantime there is much work cut out for the Executive Committee and special committees. Probably the most important matter discussed and partly settled at the business sessions last week was the standardization of the gas engine. A resolution was adopted providing that the Executive Committee meet in special session within two weeks, and if they deem it advisable they will report to President Myer Loeb at Cincinnati, who will at once name a Special Committee of Twelve, in whose hands the entire matter will be placed. It is probable that a letter vote will be taken, and the findings of this committee reported to the members in annual convention at Racine for final action.

O. C. Parker, Racine, was appointed chairman of the Programme and Entertainment Committee for the December convention. One of the features is to be a complete isolated lighting plant. It is expected that there will be also a number of working machines.

The machine tool section of the Cincinnati meeting was such a success that this will undoubtedly be a permanent feature of future conventions. At the outset Secretary Strittmatter sent a letter of invitation to all machine tool companies in the Cincinnati field, asking their co-operation. Two of the larger concerns contributed to the fund, and had space in the exhibition department. One of these sold to one delegate a bill of \$3000 to \$4000, and also had some excellent inquiries. The other opened two good accounts. Both companies, from present indications, will be represented at the Racine meeting with twice the amount of space. According to their promise the Cincinnati convention managers returned to each subscriber to the fund 40 per cent. of his subscription. The convention adopted a series of resolutions, expressing appreciation of the Cincinnati entertainment, and these were signed by Otto M. Knoblock, South Bend, Ind.; H. W. Bolens, Port Washington, Wis., and J. C. Rogers. The entertainment was constant, and much of it of an unconventional character.

### The Gas Engine in Mexico

One of the most interesting delegates to the convention was J. W. Hall, vice-president of the Fundicion de Fierro, San Luis Potosi, Mexico. Besides reading an interesting paper on the field for gas engines in Mexico Mr. Hall gave some very valuable advice on preparing and shipping goods for Mexico, on the character of machinery and tools needed there, and also on the great possibilities for the gas engine in that country. Mr. Hall expects to make an arrangement with some gas engine manufacturer for representation in Mexico, and while in attendance at the convention bought considerable machinery and some tools. His company is arranging to go into the manufacture of gas producers.

In his paper on "The Gas Producer and Gas Engine in Mexico" Mr. Hall said that the mining industry is a promising field for the gas engine in view of the scarcity of fuel, the long haul and the fact that many low grade ores require considerable power to treat them. Agriculture and manufacturing are also important fields. Since those who will use this power are inexperienced the producer gas engine must be simple and durable and the gas must be supplied free from tar. It must be produced so that less dependence will be put upon the scrubber. The writer had made some tests with a down draft producer, taking out the gas through the hottest part of the fire in order to obviate tar in the engine, converting this rich fuel into gas instead of taking it into the engine, and also avoiding the excessive use of oil in an endeavor to dissolve

it. He advised against sending tar producers to Mexico. "My sad experience in Mexico," said the speaker, "with many engines using producer gas has been that they would run but a few days, be shut down and cylinder heads taken off and valves removed and cleaned. The class of producer gas in Mexico should be such as will obviate these difficulties and as soon as this point has been reached we will be unable to supply the Mexican demand for this class of power."

## The British Iron Market

While the British iron market has been drifting of late without pronounced tendencies its tone has been slightly better this month, perhaps in response to better news from the United States concerning the railroad position. While such measures are not a sign of prosperity the reported blowing out of a number of blast furnaces in the Middlesbrough district is expected to steady the pig iron market. Export shipments of Middlesbrough iron have been slightly better in June than in May, but are still far from satisfactory. Up to June 8 the total was 34,246 tons, as against 30,380 tons in the same portion of June, 1909, and 25,860 tons in the first eight days of May of this year. Very slight additions are being made to stocks, which are large, the total in Connal's stores being 434,794 tons on June 7. No. 3 Cleveland pig iron is selling at about 49s. 9d. for early delivery. Buyers are covering their requirements for only short periods and the condition of the warrant market encourages a continuance of hand to mouth buying. Scotch hematite pig iron has had a distinct break and as low as 69s. was done recently on a round lot, which is the lowest figure named since the beginning of March, representing a drop of 6s. from the highest point of the year. German competition in billets has been less severe of late, but the low prices previously made by European sellers have unsettled the market and British makers find difficulty in getting the prices they have named, which are about £5 5s., Sheffield, for dead soft steel. Business in ship and boiler plates has been excellent and mills have been running at full capacity. Scotch and North-east Coast shipyards have booked further orders for new steamers and demand for material for vessels is well maintained. The rail trade has fallen off recently, though inquiries have come up from the Transvaal and West Australia.

## The Crucible Steel Company of America

The directors of the Crucible Steel Company of America met at Pittsburgh last week and declared a regular quarterly dividend of 1¾ per cent. on the preferred stock, together with ¾ per cent. additional, and a scrip dividend of 10 per cent., payable to holders of record June 21. This leaves a balance of 16 per cent. of the 26¾ per cent. back dividends, and this the company will gradually retire. Chairman Herbert Dupuy stated that the company now has on its books the largest tonnage in its history. In the statement of profits given below inventory values have been reduced to the present level, and all charges for depreciation, renewals and repairs have been deducted. The physical condition of the company's plant has been greatly improved in the past year, and this is one factor in the better showing of earnings now made.

The statement for the nine months ending May 31, 1910, shows profits of \$3,950,952, deductions for depreciation and repairs are \$969,088, and for contingencies \$89,647, leaving net profits of \$2,892,217. This represents an increase of \$1,484,165 over the net profits for the nine months ending May 31, 1909. The surplus May 31, 1910, was \$4,828,392, against \$2,856,582 one year preceding. The net current assets May 31, 1910, were \$8,414,869, an increase in the year of \$2,141,202.

## The Machinery Markets

While the machinery trade is reported to be rather quiet in some parts of the country, not a few large manufacturers are getting a good volume of business. An example of this is found at the works of the Brown & Sharpe Mfg. Company, Providence, R. I., whose continuous growth since the resumption of activity following the panic has been such that now between 4500 and 4600 men are employed, which is a record for that plant. In the East there are some inquiries for automobile equipment that will shortly result in good business, and in New England the textile mills are buying. In some instances a better volume of business is reported from Philadelphia, but there, as in other parts of the country, trade is good in spots. In Cleveland the market is rather quiet and inquiries are chiefly for single tools. The automobile tool trade holds up well in Chicago and some classes of equipment are hard to get for quick delivery. The general machinery trade in that territory is quiet. Marine equipment work is keeping the shops busy in Detroit, and there is a good demand for material from the brass and aluminum manufacturing trade. In the Northwest inquiries have fallen off, but there is an optimistic feeling in the trade in that territory. Mining companies are contributing quite extensively to the support of the market on the North Pacific coast, but the demand for general equipment is light. In the South and in the Southwest business is fair, and in those sections as well as in the Central West the buying is largely done by people who are engaged in the manufacture of some form of building material, such as tools, builders' hardware, &c.

### New York

NEW YORK, June 22, 1910.

If the demand for automobiles for next year's delivery continues as good as it is at present the inquiries indicate that there will be some buying by manufacturers before long. The United States Motor Company, which controls a number of automobile companies has planned to build a large number of cars during 1911, and its programme includes the construction of 25,000 Maxwells, 15,000 Brush machines and 4000 Columbias. The output of the Stoddard-Dayton Company will also be considerably increased. Some classes of machine tools are still hard to get in this market, but buyers are able to make slightly better delivery terms than they were four weeks ago. The demand for power equipment is better than it has been in several weeks and more business is being done in this line than in some other branches of the machinery trade. The demand for heavy cranes is also especially good. Manufacturers of heavy lifting magnets, the use of which is increasing, is particularly good and manufacturers of small electric power units, such as are used in hotels, office buildings and large apartment houses are getting about all the business they can attend to. The railroads are moving slowly in the matter of buying, but machinery men in this territory who attended the convention of the Master Car Builders and Master Mechanics at Atlantic City report that they not only booked some good sized orders as the result of the exhibits they had there, but started some business that will result in good purchases soon. From what they gather from railroad men most interested in machine shop equipment the machinery men decided that it will not be long before railroad purchases increase.

The Griscom-Spencer Company, 90 West street, New York, has purchased the business, patents, good-will, &c., of the Goubert Mfg. Company, whose plant for manufacturing heating apparatus at Bergen Point, N. J., was recently disposed of at a receiver's sale. It is the intention of the Griscom-Spencer Company to continue the manufacture of the Goubert specialties at its Jersey City factory and to this end it has engaged the services of Mr. Goubert to handle that part of the business. The company reports a steadily increasing business in Reilly multiple coil feed water heaters and Bell humidifiers, as well as in its other specialties.

The Fechheimer Steel & Iron Company, whose main offices are at 2 Rector street, New York, has acquired a site or 11 acres on the Lehigh Valley Railroad at Allentown, Pa., which will be used for a scrap yard. Machinery repair work will also be done for which some tools will be required. Hoists, shears and other appliances for handling scrap iron will also be provided. The buildings are now under construction.

Equipment for a machine shop, blacksmith shop, foundry with cupola and doubtless apparatus and equipment for sheet metal working and the like, will be required for the Technical High School about to be built in Jersey City, N. J. This school is an extension to the present high school building, but is to be given over to industrial training.

Frank Sutton, 80 Broadway, New York, has been appointed consulting engineer.

The Green Fuel Economizer Company, Matteawan, N. Y., suffered a \$40,000 fire loss June 17, one of its buildings being totally destroyed. Plans are already under way for reconstructing, and arrangements have been made for keeping delivery promises on equipment that has been ordered, so company's output will not be curtailed.

Henry Adams, consulting engineer, 859 Calvert Building, Baltimore, Md., has plans under way for a power house, central heating, lighting and pumping plant to be erected at Bayview, near Baltimore. The plant will include a fire proof brick and concrete structure, 69 x 98 ft., and a supporting coal bunker will be erected in connection with the plant.

Bids will be opened July 6 by R. J. McCandlish, Clerk of Hancock, Md., for a complete waterworks system, including a reinforced concrete reservoir. Plans and specifications may be obtained from Mr. McCandlish, or they can be seen at the office of the consulting engineers, Penniman & Fairley, Baltimore, Md.

Some additional motors to operate on alternating current will be installed for driving machinery in the plant of the National Starch Company, Oswego, N. Y.

The Power Specialty Company, New York, which recently put in operation at Milwaukee, Wis., one of the largest incineration plants in the country, has taken the contract for a 60-ton destructor for the city of Montgomery, Ala. The heat generated in the process will be used under boilers for power purposes, probably in connection with city pumping. The Power Specialty Company operates under the patents, and with the benefit of the experience, of the Heenan & Froude Destructor Company, an English concern which has had many years' trial of plants abroad to guide it in determining upon its latest designs.

Some new machinery will be required following reconstruction work at the several plants of the Santa Clara Lumber Company, Tupper Lake, N. Y., which will probably be undertaken at once. A fire which recently visited the mills caused about \$100,000 loss.

A new boiler and pump house is to be erected by the New York Central & Hudson River Railroad in connection with its shops at Weehawken, N. J.

An extremely large addition to the hydroelectric plant of the Aluminum Company of America at Massena, N. Y., on the St. Lawrence River, will be undertaken by Aug. 1, so as to permit of a total development of about 40,000 kw.

The statement is made locally, on what appears to be reliable authority, that the plant of the Dunkirk Lighting Company, Dunkirk, Ind., has been purchased by the American Gas & Electric Company, New York, which now controls several other properties in that vicinity. The erection of a large central station for generating electric power is predicted.

The Syracuse Pattern Works, Syracuse, N. Y., which has been in business two years, has incorporated with \$10,000 capital stock and will increase its pattern shop and also do a foundry business.

The Turner Construction Company, New York, has the contract for reinforced concrete buildings for the Hecker Electro-Chemical Company, Niagara Falls, N. Y. The work includes building a new cell house, a new four-story bleach house, and rebuilding a bleach house, repair shop and pump house.



## THE MACHINERY MARKETS

### Chicago

CHICAGO, ILL., June 20, 1910.

While there is more or less talk among machinery dealers that business is quiet and has not been satisfactory the past spring, there seems on the whole to have been a fair amount of business done in machine tools. In several important lines the capacity of the factories is sold ahead far enough to make a good deal of trouble for a new customer who wants early delivery. Milling machines, for example, are sold ahead about as far as they have been at any time since last fall and when a new customer appears it is very hard to satisfy him. Automatic screw machines and practically all lines of automatic machines are sold well ahead in this market, and deliveries can seldom be made under five or six months. This condition also appears in the larger sizes of boring mills, and lathes are also sold several months ahead, especially on high class machines. In small tools there has been a good run of business right along, and the houses which specialize on this line of equipment seem to be well satisfied with results obtained during the past six months. The manufacturers who depend on railroad trade are disappointed, as direct purchases from the railroads have been light and the industries which manufacture railroad equipment have not felt encouraged enough to invest much money in the improvement of their plants. It is believed, however, that the railroads will be more liberal buyers after July 1, when they start on their new fiscal year.

Deere & Co., Moline, Ill., has purchased the plant and business of the Kemp & Burpee Mfg. Company, Syracuse, N. Y., manufacturer of the Success manure spreader. These spreaders will now be made in the plant of Deere & Co. in which its Marseilles sheller lines are manufactured. Original plans for the new Marseilles plant at East Moline provided for a main building, 80 x 250 ft., four stories, but these plans have been revised to allow for an extension of 300 ft., making the ground dimensions 80 x 550 ft. The dimensions of the blacksmith shop and storeroom have also been changed from 80 x 250 ft. to 80 x 550 ft. The foundry originally planned, 80 x 250 ft., will have dimensions of 80 x 450 ft. The one-story warehouse, 100 x 600 ft., will be completed according to original plans. In the new plant all implements now manufactured at Marseilles will be turned out, the present plant being abandoned as soon as shop buildings at East Moline are completed, but the plant at Syracuse will continue in operation to meet the demands of the Eastern trade.

The Continental Bolt & Iron Works, Chicago, now has well under way the first group of buildings for its new plant on the 10-acre tract recently purchased on West Forty-third street. This group of buildings for bolt making will cover about 2 acres, and will be one story steel structures with brick walls. The power house is a separate building and has a 250-kw. direct connected generator, Stirling boilers with mechanical stokers and all modern auxiliaries, and has room to double the power equipment. The factory buildings are fully equipped with electric cranes and modern mechanical handling devices. The plant will be in operation this fall, and the company will then be in position to furnish a full line of all kinds of bolts, nuts, lag screws, &c., in all sizes. It is the intention of the company to extend the plant from time to time as business demands.

The Kelly-Atkinson Construction Company, 188 Madison street, Chicago, has purchased 2½ acres of land at Rondout, Ill., where it will remove its plant and warehouse now located at Twentieth street and Calumet avenue, Chicago. The company is engaged in the construction of bridges. Plans are now being prepared for the new plant, which will be of larger capacity than the one now operated.

The structural iron works of the Hansell-Elcock Company, Twenty-third place and Archer avenue, Chicago, were badly damaged by fire caused by an explosion June 16, the machine shop, pattern shop and riveting shops with machines and equipment being a total loss. A portion of the works, including the foundry, which was not destroyed by fire will be running again this week, and steps will be taken to rebuild.

The Nelson Iron Works, Nelson, B. C., has taken over the business and stock of the Rossland Engineering Works, Rossland, B. C., and will succeed that company as British Columbia agents for the Sullivan Machinery Company, Chicago. An increased stock of Sullivan rock drills, diamond drills, hammer drills, air compressors and supplies for these machines will be maintained at Nelson.

The Associated Foundry Mfg. Company, Waterloo, Iowa, the incorporation of which was mentioned last week, has purchased the foundry formerly owned by the Waterloo Gasoline Engine Company. The building is 80 x 550 ft., with several additions, and is fully equipped. The following are the officers of the company: J. G. Phelps, president;

Albert Flanders, vice-president; W. C. Logan, secretary and treasurer.

The Smith Motor Company has been incorporated at Terre Haute, Ind., with \$25,000 capital stock to manufacture motors and automobile parts. The directors are W. B. Smith, E. B. Smith and M. B. Shelton.

The Vacuum Ice Engineering Company has been incorporated at South Bend, Ind., with \$50,000 capital stock to manufacture ice machinery and vacuum ice plants. The directors are William F. Eger, S. A. Knobloch and Charles S. Taylor.

The Webb-Gordon Furniture Mfg. Company's plant at Greenfield, Ind., burned June 17, causing a loss of \$15,000; it was insured for \$8000.

The Twentieth Century Wheel Company has been organized at Indianapolis, Ind., to manufacture a boltless hub and wheel for automobiles. B. D. Gilson of Indianapolis is the inventor of the device.

The Dean Drop Forge Company of Massachusetts is building a plant at Muncie, Ind., that will cost \$100,000.

The O-U-Handy Tool Company, Indianapolis, Ind., has increased its capital stock from \$20,000 to \$30,000.

A. Finkel & Son, Chicago, have had plans drawn by E. M. Newman for a forge shop to be erected in the near future.

A large new roundhouse, with shops for repair work in connection, is to be erected by the Chicago & Alton Railway, at Bloomington, Ill.

The city of New Baden, Ill., has let contract to Reeves & Skinner, whose office is in the Chemical Building, St. Louis, Mo., for an elevated steel tank of 40,000 gal. capacity.

Erection of a machine shop for Steger & Sons, Steger, Ill., is about to begin.

A one-story factory, 100 x 220 ft., is to be built for the McIntyre Watch Company, Kankakee, Ill.

A new battery of boilers, electric generating set of 1000 kw., engine driven, and motor generator unit of 500 kw., will be added to the power plant equipment of the Decatur Railway & Light Company. The contracts have been placed. This is one of the properties of the Illinois Traction Company.

The Clover Leaf Machine & Axle Company has been incorporated at South Bend, Ind., with \$100,000 capital stock, to take over the business of the Clover Leaf Machine Company. The directors are Maurice L. Yuster, Arthur E. Wile, Kersey C. De Rhodes, Joseph C. Paxton, Harry H. Keller, Frank E. Whitehall and William O. Williams.

The buildings of the Automatic Tool Company, Richmond, Ind., have been completed and it is expected the plant will be ready for operation early in July. William Bockhoff is president.

The Big Six Chair Company has been organized at Evansville, Ind., and will build a plant to cost \$30,000. Benjamin Bosse, a furniture manufacturer of that city, is one of the promoters.

The Comfort Heating Company has been organized at Anderson, Ind., with \$10,000 capital stock to deal in light, heat and power. The directors are Otis P. Crim, Edward C. Handy and William L. Collier.

The M. Rumley Company, Laporte, Ind., manufacturer of agricultural implements, has begun the erection of a pattern shop to cost \$20,000.

Rushville, Ind., will buy new boilers for its waterworks plant.

The Sterling Electric Company's plant at Lafayette, Ind., has been bought at receiver's sale by a committee of bankers in that city, representing bondholders and stockholders. The company will be reorganized and continued in operation. It was for several years a growing, thriving industry, but litigation consumed the profits. The purchase price of the sale was \$60,000.

The Crane Company, Chicago, has under construction a four-story building, 110 x 120 ft., for the first section of the company's brass department. This building is of concrete fireproof construction and is of the same character as a building just completed by the company for the malleable iron fittings department, which will be ready for occupancy within the next two months. The company advises that it has adopted a general policy of fireproof construction for manufacturing buildings as well as branch houses. It has been found that the increase in the cost of lumber and the decrease in the past two years in the cost of erecting fireproof buildings has made the latter relatively cheaper. Aside from the question of cost, however, the safeguarding of the business has been considered. A large proportion of the machinery used by Crane Company in its manufacturing departments is of special design and manufactured by the company itself. In the event of a serious fire it would be impossible to go out in the market and obtain new machinery to replace the equipment that might be damaged or destroyed, and the company therefore contemplates getting all of its manufacturing business into fireproof buildings.

## THE MACHINERY MARKETS

The Parlin & Orendorff Company, Canton, Ill., manufacturing plows and agricultural implements, has extensive improvements under way. A power house which is under construction will furnish electrical power for operating the entire plant, amounting altogether to 8000 hp., which will be furnished by steam turbines and generators in units of 2000 hp. The boilers, stokers and other equipment for the plant have already been purchased. The stack will be 225 ft. high. The company also has in course of construction a new warehouse, 90 x 400 ft., four stories, and is just completing an addition to the blacksmith shop, 60 x 150 ft. New machinery and equipment is being installed in nearly every department of the business to provide increased capacity.

### Philadelphia

PHILADELPHIA, PA., June 21, 1910.

In some few instances a better volume of business is reported; in other cases trade is said to be hardly up to the average. The market on the whole continues irregular and the aggregate business placed does not show any material betterment. The bulk of the orders has come from distant parts of the territory and are still principally for single or small lots of tools. No fresh lists of any importance have come out, and business of any size now before the trade develops rather slowly. Railroad buying is slow as far as machine tools are concerned, although one of the roads in this territory has placed some good car orders and is negotiating for a further supply. The local locomotive builder has shared in some further good orders for motive power, but the effect of the recent controversy between the Government and the railroads, although adjusted, wears off slowly. A fair demand for special tools is noted, particularly cold saw cutting-off machines for foundry as well as a general class of work. There is no diminution in the activity of machine tool builders' plants, but in many instances a dull summer, as far as new business of any importance is concerned, is anticipated.

The boiler and engine trade, particularly for power installations of moderate size, continues fairly active. The second-hand machinery purchases show irregularity, some classes of equipment are in good demand, others appear almost neglected.

Local machine tool builders as well as merchants have given considerable attention during the week to the convention of the Master Car Builders' and American Railway Master Mechanics' Associations at Atlantic City, N. J. The exhibition of machine tool builders and supply men, held on the Million Dollar Pier, is most elaborate, although the display of working machine tools is rather smaller than usual, one of the principal difficulties of making such a display being the irregularity of the power supplied. Special attention has been given by nearly all builders to the exhibition of tools with motor drive. The exhibits from this city are referred to elsewhere in an article covering the entire machinery exhibition.

The Chadwick Engineering Company, Pottstown, Pa., manufacturer of the Chadwick automobile, has acquired property embracing about 12 acres in Pottstown, Pa., on which a large automobile manufacturing plant is to be erected. Plans for the new plant have not yet been completed.

The Light Mfg. Company, Pottstown, Pa., is making plans to take over the plant of the Chadwick Engineering Company, which will be vacated on the completion of its new building. The acquisition of this new plant will give the Light Company much needed additional facilities.

The Bilgram Machine Works, Hugo Bilgram, proprietor, has purchased property, 40 x 80 ft., adjoining the present plant on Spring Garden street below Thirteenth street, on which an addition to the machine shop will be erected. Plans for the same are now under way.

Plans are being formulated for the granting of a 50-year franchise to the Salem Electric Company, Salem, N. J. This company, it is understood, is the successor of the Electric Light, Heat & Power Company of that city. If present plans mature considerable improvements to the plant will be made.

The Department of Wharves, Docks and Ferries, city of Philadelphia, opened bids June 17 for a combination dredge, tugboats and scows for the municipal dredging plant; also various supplies. Bids will be scheduled and the awards made in the near future. The city is now having a hydraulic dredge built by the Ellicott Machine Company, Baltimore, Md.

The Wildwood & Delaware Bay Shore Line Railroad Company, organized to construct a double track line from Wildwood, N. J., to the main line of the Philadelphia &

Reading Railroad branch from Camden to Cape May, N. J., and a single track road from that point to Bay Shore on the Delaware Bay, connecting at that point with steamboat service to Philadelphia, was recently granted a charter and will, it is understood, shortly begin work on the proposed road.

A. C. Shand, chief engineer of the Pennsylvania Railroad Company, is asking for bids for the construction of a new passenger station with modern conveniences at Greensburg, Pa. The new station is estimated to cost about \$100,000.

The Barrett Mfg. Company has been granted a permit to build a two-story shop and office, 30 x 74 ft., and a one-story addition of the same size to its plant in the Thirty-sixth Ward in this city.

The reported order of 60 locomotives for various lines of the Hawley System, recently appearing in the public prints, is not a new one, being a repetition of an order placed some time ago. Reference to the Baldwin Locomotive Works allotment of 32 engines on this order has been previously made.

Wm. Wharton, Jr. & Co., Inc., are making an addition, 71 x 128 ft., of brick and steel, to their finishing shop. Crane runways will be extended so that the present crane service will also serve the new addition. No new general equipment will be required.

The Hess Machine Works reports a marked increase in the demand for file making machinery. Orders for five sets of machines for export to Sweden, two for Germany and one for France have recently been booked. A better domestic demand from customers in New England and the Middle West is also reported. Eight sets of file making machines have recently been shipped a Western customer. The plant is now being operated at full capacity.

The Pennsylvania Globe Gas Light Company is taking bids for the erection of a manufacturing plant, 75 x 150 ft., two and three stories, to be built at Allegheny and Glenwood avenues. The building is to be of brick, concrete and steel and will be used for manufacturing its lighting appliances. Electricity will be used as power. A good share of its equipment will come from the company's present plant at Nineteenth and Market streets, although further purchases are contemplated.

### Cincinnati

CINCINNATI, OHIO, June 21, 1910.

Conditions in the machinery and machine tool lines in this district vary. Business is coming in spots, and it is the larger plants that receive the major share of current orders. Word was received here this week of some new lists, small ones, from railroads in Southern territory. Some interests in this territory are preparing to bid on the tool requirements of the new Beech Grove (Indianapolis) shops of the Big Four. This list has not yet been announced, but is due within the next 10 days or so. It is reported to be about \$96,000.

Early in the week several full carload shipments of tools were made from Cincinnati to New York and the East, the greater part for export. There were milling machines, gear cutters, shapers and lathes. Domestic orders have not been as numerous, but have been for the most part for tools of the heavier and more expensive types. One concern manufacturing shapers sold a bill of 15 calling for 14, 16 and 20 in. sizes.

The Rahn-Carpenter Company, manufacturer of engine lathes and a line of 40-in. gap lathes, reports business entirely satisfactory. It has redesigned its 40-in. sliding bed gap lathe to meet the demands of large repair and jobbing shops for a standard swing tool of this type.

Hoefinghoff & Kimmel of the Cincinnati Grinder Company, whose intentions have already been printed in *The Iron Age*, have begun the work of adjusting themselves to their new plant at Colerain and Alabama avenues, in the machine tool district. A planer, some drill presses and a few other tools are yet to be installed, but they expect to begin at once the manufacture of their specialty, a universal No. 2 grinder, as they have a number of orders booked.

The adjustment of the wage demand of molders and coremakers in this district removes a source of concern to users of castings, but they must now look for readjustments taking account of higher foundry costs. The settlement, as noted elsewhere, affects Cincinnati, Covington and Newport. Beginning January 1 and continuing until July 1, 1912, floor and bench molders and coremakers will receive \$3.25 per day alike. More than 1000 men are affected by the agreement in the three cities. All jobbing foundries in this district have been running light; some having reduced heats to three per week and averaging 8 to 10 or 12 tons, where their capacity has been 18 and 20 tons.

The coming year will see many changes in the foundry



## THE MACHINERY MARKETS

situation in Cincinnati territory. In addition to the opening of the immense brass and iron foundries of the Lunkenheimer Company, the D. T. Williams Valve Company will erect a model institution adjoining its new purchase at Spring Grove avenue and Township street. The William Powell Company is enlarging its foundry facilities, and the Modern Foundry Company, which has one of the most complete plants of its kind, is expected to announce an opening and celebration within a few weeks at its new location in the Oakley district.

Considerable interest is manifested by machinery manufacturers in the new Ohio Mechanics' Institute, now in course of erection at Court and Walnut streets, Cincinnati. It is certain that every item of equipment of the nature of machinery and tools will be donated by manufacturing concerns. In the week word came to the directors that the International Steam Pump Company had shipped three service pumps for installation in the million-dollar building and also an air compressor, storage tanks, &c.

At Ironton, Ohio, the plant of the Ironton Engine Company is well occupied with work. It has been shipping an average of two cars a month of the Hobart-Alfree locomotive cylinders to Mexico, since May of 1909. An interesting piece of work recently completed is a miniature locomotive built for the Hobart-Alfree Company, Chicago, to be placed on exhibition at the exposition of the Master Car Builders' convention at Atlantic City. It weighs 3000 lb. After the Atlantic City convention it is to be shown in the European countries.

The Middle West Engineering Company, Cincinnati, has been incorporated for \$100,000 by James E. Hewes, F. C. Busch, C. B. Matthews and Randolph Matthews. The company plans to do specializing along general engineering and construction lines. The leading spirit is Mr. Hewes, who was formerly with the General Electric Company, and who will be president of the new organization.

A new machine shop, regarded as a model of its kind has recently been completed in Elwood, Ind., by James Howard. The building is of reinforced sheet iron with cement floor and the fittings and equipment are all of the most modern and unique types.

The Fort Wayne, Ind., Engineering Company is planning to enlarge by the erection of an additional building. The company contracts extensively for structural iron work and also makes a line of condensed milk sterilizers.

The new plant of the National Automatic Tool Works in Beallview, Richmond, Ind., was dedicated June 16 with interesting ceremonies.

The convention of the Ohio Division, National Association of Stationary Engineers, at Hamilton, Ohio, June 16, 17 and 18, elected the following officers for the ensuing year: President, Harry E. Eichorn, Columbus, Ohio; vice-president, John J. Coughlin, Hamilton; secretary, Joseph J. Ahlers, Cincinnati; treasurer, J. E. Radigan, Cleveland; conductor, Casper Geise, Delphos; doorkeeper, Wm. Long, Toledo, Ohio; deputy, E. F. Simit, Dayton. The convention of 1911 will be held in Cincinnati.

A number of important improvements are planned by the directors of the People's Light & Heat Company, Indianapolis, Ind., at an estimated cost of \$65,000. Practically a duplicate set of pumps, boilers, &c., will be set up, a new stack 200 ft. high will replace the present three smaller ones, and modern smoke consuming devices will be installed. A large centrifugal pump will increase the efficiency of the hot water service.

The Miami Supply Company has been chartered at Dayton, Ohio, for \$10,000 by Charles E. Pease and others.

Among recent sales of the John A. Stewart Electric Company, Cincinnati, are two 500-kw. direct connected generator engine units for the People's Portland Cement Company's plant at Sandusky, Ohio, and two 300-hp. high pressure Stirling boilers for auxiliary power at the York Haven Paper Company's factory, York Haven, Pa.

### Pittsburgh

PITTSBURGH, PA., June 21, 1910.

There is still a great deal of scattered buying for the account of iron and steel mills, machine shops, foundries, boiler making plants, &c. In general the industries of this district are themselves responsible for a larger percentage than usual of the aggregate demand; but estimates made on inquiries from other parts of the country, many of which appeared to have been fruitless, have now developed into orders, and in this respect the present situation is very encouraging. Dealers in machine tools look for a rather quiet period during the month of July and a part of August, with pronounced activity by fall. Meanwhile, terms of delivery may have a chance to improve.

Just at this time the principal feature of the local market is the buying in behalf of collieries, notably those of

West Virginia, where new shafts are being opened in considerable number and existing operations extended. Thus far most of the purchasing has been carried on in such a manner as to avoid creating any stir. In nearly all cases the use of electric power is being provided for, with consequent need of generating sets, motors, controllers, line material and various detail apparatus.

Among the automobile plants for which manufacturers and dealers here expect to furnish considerable equipment is that of the Sebring Automobile Works, Sebring, Ohio, the management of which has plans for a new building, 150 x 500 ft., to be used in the manufacture of a six-cylinder machine.

A new manufacturing plant is to be erected in Pittsburgh for the National Metal Weather Strip Company. Wm. E. Snaman, whose office is in the Empire Building, has charge of the plans.

It is announced that the new plant of the General Electric Company, at Erie Pa., will consist of nearly 60 buildings. A contract for some construction work has already been let, and bids on the remainder will be taken right along from this time forward.

The Barberton, Ohio, works of the Babcock & Wilcox Company are crowded to their utmost capacity on orders from all parts of the West, and even with the increased facilities to be provided there will be difficulty in keeping up with the demand. As, however, this company has a reputation for strictly fulfilling promises of delivery, there will undoubtedly be ample provision made for whatever output is necessary.

From Clarksburg, W. Va., it is reported that the Grasselli Chemical Company is proceeding with plans for the erection near there of a new plant to be used for treating zinc ore.

The Southern plant of the Harbison-Walker Refractories Company, Pittsburgh, which is located at Wylam, Ala., is being enlarged. An additional grinder and tables and two new kilns of large capacity are to be provided.

The Panama Coal Mining Company, Moundsville, W. Va., will install an engine driven electric set and motor driven machinery for development work. The company's headquarters are in Pittsburgh.

The Bethlehem Steel Company, South Bethlehem, Pa., has completed plans for a new gas engine power plant, 100 x 315 ft., which will be equipped with four-cycle, double acting units of the company's own build direct coupled to alternating current generators. A forge shop and annealing plant are also reported to have been determined upon as an addition to existing facilities.

The American Sintering Company will build a plant of moderate capacity in Sharon, Pa. The dimensions proposed are 30 x 120 ft., one story.

Several new shafts are to be opened in the vicinity of Worthington, W. Va., by the Consolidated Coke Company, which will install electrically operated machinery for mining and handling coal. Orders for equipment are understood to have been practically decided upon. The main office of the company is at Fairmont, W. Va.

W. B. Scaife & Sons, Pittsburgh, are finding a good market in the South, as well as elsewhere through the country for filtration and water softening plants used both by municipalities and industrial establishments. The field there developed somewhat later than in most sections, but now shows great promise for the future.

The Youngstown Iron & Steel Company, Youngstown, Ohio, will be adding somewhat during the summer to its motor equipment. A direct current machine of 40 hp. has just been ordered.

The Florence Electric & Utility Company, Florence, S. C., reference to whose plans has previously been made, is placing contracts here for operating equipment, including a belted generator of 150 kw. for alternating current, exciter unit, switchboard, &c.

The American Sheet & Tin Plate Company, Vandergrift, Pa., has let the contract for a new office building.

The Majestic Collieries Company, Shamokin, Pa., is about to install a complete coal handling plant, electrically operated, at Cedar, W. Va.

The Youngstown Iron & Steel Roofing Company, Youngstown, Ohio, will install an engine driven generating unit of 500 kw., the contract for which was recently placed.

As a result of the success that has been met with in the introduction of its solid manganese steel frog, the Lorain Steel Company, Johnstown, Pa., is reported to have decided upon an enlarged production for next season, involving the purchase in due course of some new equipment. Plans for such improvements have not, however, been officially announced.

The Wheeling Mold & Foundry Company, whose general sales office is in the Farmers' Bank Building, Pittsburgh, has been estimating lately on iron and steel castings for hydroelectric power developments, a good many of which are now in progress at various points in the country. For steel

## THE MACHINERY MARKETS

castings the acid open hearth process is used at the company's foundry.

The Golden-Anderson Valve Specialty Company, Pittsburgh, calls attention to the cushioned triple acting valves and automatic nonreturn valves of its manufacture, a feature of which is an arrangement similar to the Corliss dash-pot, preventing sticking, hammering or chattering. Among the users are some of the largest steel mills in the country.

The city of Martin's Ferry, Ohio, whose requirements were recently mentioned, has purchased an Allis-Chalmers generator of 250 kw., to be direct connected to a Buckeye engine. Steam will be furnished by two new Erie boilers.

The H. K. Porter Company, in addition to its standard lines of locomotives for industrial plants, quarries, logging and other development operations, has met with much success this season in all of the timber cutting districts in the sale of its new type of compressed air locomotives. They are found particularly valuable where the fire hazard would be greatly increased from flying sparks.

The Maryland Coal & Iron Company, Frostburg, Md., will install machinery for the generation and utilization of both electric and pneumatic power, with a view to largely extending its operations.

The Morse Iron Works, Erie, Pa., has ordered a direct current dynamo of moderate capacity for connection to an engine.

The Blaisdell Machinery Company, Bradford, Pa., builder of air compressors of single and two-stage types and manufacturer of gray iron castings up to 3000 lb., is operating its plant to greater capacity than for some time. In the past year the company has considerably increased the sale of its air compressors for use in connection with vacuum cleaning outfits. It is also extending its operations in the industrial field, and has recently added the following to its list of sales representatives: W. R. Hall, Baltimore, Md.; Robert Ross Jones, Harrisburg, Pa., for eastern Pennsylvania; F. R. Perkins, Dallas, Texas; Jacques Steel Company, Kansas City, Mo., and Gath & Gardner, Buffalo, N. Y.

The Corry Metal Furniture Company, Corry, Pa., recently incorporated with a capital stock of \$50,000 has purchased a site, 110 x 226 ft., with an L, 60 x 110 ft., on which it will erect a plant for the manufacture of metal bedroom furniture. A building, 60 x 110 ft., three stories, of concrete, brick and mill construction, will be erected. A gas engine, motors, toggle presses, lathes, shapers and other machinery will be required. Details can be secured from James P. Drown, secretary.

The Titusville Iron Company, Titusville, Pa., builder of tubular boilers, gas and steam engines, is building a 250-hp. vertical, four-cylinder gas engine for the Titusville Electric Light & Power Company. It will drive an alternating current generator and is to run in parallel with two other 175-hp. three-cylinder gas engines that this firm built for the Electric Company last year. The Titusville Iron Company is busy on a standard line of boiler work, oil country gas engines, &c. All manufacturing departments are being operated to capacity, while the engineering division is making estimates on considerable prospective business.

The Raymond Mfg. Company is building an addition to its plant at Corry, Pa., about 75 x 150 ft., three stories, of concrete, steel and brick construction. The company manufactures coil springs from 1-100 to 9-10 in. thick for automobiles, gas engines, bicycles, &c. The addition will permit of rearranging the equipment in the older building and eventually its capacity will be doubled. The company some time ago installed a 125-hp. Struthers-Wells gas engine that will drive the machinery in the new building, all of which has been contracted for. William Cole is now general sales agent for the company.

The Union Drawn Steel Company, Beaver Falls, Pa., has not yet placed contracts for its new buildings to replace the ones recently destroyed by fire. Excavation and foundation work will likely be placed this week, and details of the buildings will then be completed.

### Cleveland

CLEVELAND, OHIO, June 21, 1910.

The local machinery market continues rather quiet. There is a fair volume of inquiries for lots of four or five tools or under, but buyers are slow in placing orders, and many of such inquiries that have come out in the past two or three weeks have not yet resulted in business. The demand at present is largely for small tools. Business is quite well scattered, although the makers of automobile parts and accessories seem to be the most active buyers. The demand direct from the automobile manufacturers continues light. While the general feeling is optimistic there is an undertone of uncertainty regarding business conditions during the next

few months, and to this is attributed the holding back in the placing of orders for new machinery. Engineering firms report a good volume of work in prospect in the erection of new power plants and additions, but in a number of cases that work is being held up for the present. The call for some lines of heavy and special machinery continues quite good. Not much inquiry is coming out at present for handling machinery. Little business is coming from the railroads for any kind of machinery equipment. The demand for pneumatic tools is quite good. Deliveries on some lines of standard tools show an improvement.

Manufacturing plants in this city and vicinity are still well filled with work. While some report a falling off in orders, plants in metal working lines continue to run at full capacity, and the feeling prevails that the summer lull will be followed by a good volume of buying in the fall.

The National Carbon Company of Cleveland plans the expenditure of \$400,000 in the new plant that it will erect at Niagara Falls. Plans for the main mill building have been completed by the Osborn Engineering Company, Cleveland, and contracts for this will be let shortly. Other contracts will be placed as soon as further plans are completed. The main building will be 170 x 350 ft., of steel construction, with a concrete roof. There will be six buildings in all. The company has purchased a 13-acre site, somewhat less than half of which will be occupied at present, the remainder to be kept for future extensions. The plant will be used for the manufacture of carbon electros for the manufacture of electric steel and for use in other electric processes. Considerable machinery of a special character will be required.

A plant for the manufacture of acetylene gas welding plants will be established in Cleveland by the Metals Welding Company, which was recently incorporated with a capital stock of \$50,000 by Frank H. Ginn and others. The company has acquired a site on Windsor avenue. Plans for the erection of the plant have not yet been completed. C. E. Thompson, general manager of the Electric Welding Products Company, Cleveland, will be president of the new company.

The Cleveland Steel Tool Company, which was burned out in the fire in the Kennard Power Block June 11 is rushing the completion of its new plant on East Eighty-second street, on which work was well under way before the fire. The company has placed orders during the past week for machinery equipment to replace that lost in the fire, and reports that it will suffer a loss of only about 10 days by reason of the fire. The new plant will have a floor space of about 40,000 sq. ft., or about twice the size of the old plant.

Through the efforts of the Sandusky Business Men's Association, Sandusky, Ohio, it is stated that the erection of a large gas stove manufacturing plant in that city is practically assured. The names of the men back of the project are for the present withheld. The company agrees to furnish employment for 200 men.

The Seagrave Company, Columbus, Ohio, maker of fire apparatus, is having plans prepared for a large addition to its plant. A two-story brick and stone building will be erected, 100 x 114 ft. A new office building will also be built.

The Wau-To Pipe Threading Machine Company, Toledo, Ohio, has been incorporated with a capital stock of \$50,000 by Charles E. Bennett, Jay H. Miller, E. L. Troup, Charles J. Reuscher and Frank V. Meagley.

With a capital stock of \$75,000 the New Wapakoneta Wheel Company, Wapakoneta, Ohio, has been incorporated by L. N. Blume, Charles Kahn, J. W. McMurray, John Taensch, Louis Piel and C. T. Koeter.

Preliminary surveys have been made in connection with the proposed building of a water power plant on the Cuyahoga River, between Akron and Cuyahoga Falls, Ohio. Power will be provided for several manufacturing plants should the project be carried out.

The Wright Wrench Mfg. Company, which was incorporated at Canton, Ohio, to manufacture the Wright wrench, is constructing a new plant on Bath street which will consist of a machine shop, 50 x 150 ft., with carbonizing room, 50 x 130 ft., and forge shop, 50 x 100 ft. The company is capitalized at \$150,000.

The Columbus Screw & Machine Company, Columbus, Ohio, has changed its name to the Foster Gear Company and is incorporated with \$75,000 capital stock. The new company will build an addition to the plant, 60 x 100 ft., one story, of brick construction. Joseph B. Foster will be manager.

The Dunlap Engineering Company, Columbus, Ohio, formerly the Columbus Pneumatic Tool Company, is building an addition to its plant, 75 x 150 ft., which will double its capacity. The company makes pneumatic tools and automobile parts.



## THE MACHINERY MARKETS

### Detroit

DETROIT, MICH., June 21, 1910.

In some quarters, which include new plants for the production of automobiles, motor trucks or accessories, have come a number of excellent inquiries, while from most of the usual sources of fairly constant business very little trade is now being derived. Brass and aluminum foundries in various parts of the country, especially in the territory between the Great Lakes and the Ohio River, are calling for figures covering proposed enlargements of their facilities. In continually increasing measure the needs of the automobile builders are responsible for this expansion; but it is also caused by the rapidly growing use of alloy metal parts, other than iron and steel, in the manufacture of machinery of many kinds. Manganese bronze, for example, is now being much more widely used than at any time.

The Auto Body Company, Lansing, Mich., has arranged for the erection this summer of a large three-story building, to be used as a machine shop. It will be of stone and brick.

The City Council of Windsor, Ont., has voted to sell the Regal Motor Company, Detroit, sufficient ground now owned by the municipality to enable a good-sized factory to be erected, with provision for future growth.

It is reported from Sheridan, Mont., that O. B. Preston, now superintendent of the municipal electric light and water plant at St. Johns, Mich., has arranged for the construction of a hydroelectric power station near Sheridan.

Plans are being drawn for a large new plant at Elkhart, Ind., to be erected by the C. G. Conn Mfg. Company in the place of the one that burned some time ago. Woodworking tools and light metal machinery with power equipment will be required.

New boilers, tanks and operating machinery will probably be purchased in the near future for buildings to be erected by the Tivoli Brewing Company, Detroit. Construction contracts are now being considered.

The Edwin Armstrong Company, Detroit, has had plans prepared for a new plant, which includes a three-story building 50 x 120, two-story building 45 x 55, one-story buildings 45 x 62, 58 x 120, 42 x 128, 44 x 80 ft., and other structures, including a separate boiler house and power plant. Motor drive will be used in all departments, but it has not yet been decided whether to generate electric power on the premises or buy current from the Detroit Edison Company, as so many factories in this city are now doing. The Charles H. Stehling Company, Milwaukee, is in charge of the specifications.

The Russel Wheel & Foundry Company, Detroit, will furnish the iron and steel work for the new factory of the Brisco Mfg. Company, reference to which was recently made.

The new building to be erected by the Detroit Gear Machine Company, Detroit, will be pushed to completion this summer. Its dimensions are 60 x 120 ft., two stories, and the arrangement will be such as to permit future additions without disturbing the unit system of production that has been adopted.

An addition 100 x 115 ft. will be made to the plant of the Port Huron Construction Company, Port Huron, Mich.

The capital stock of the Vulcan Gear Works, Detroit, has been increased \$100,000.

Plans are being drawn by George Scott, an architect of Ann Arbor, Mich., for a manufacturing establishment 50 x 150 ft., to be built for the Ann Arbor Motor Company, whose present address is given as 113 Fourth street in that city.

As a result of the quantity of work offering this season, which has more than taxed the capacity of its plant, the management of the Great Lakes Engineering Works is considering some additions and replacements of machinery. No definite decision has been made.

Gasoline engines will be the product of the Champion Mfg. Company, recently organized at Pontiac, Mich., which has secured a plant there and will be ready for business soon.

The electric vehicle plant of the Anderson Carriage Company, Detroit, is being enlarged for the manufacture of both motor truck and pleasure cars. The addition will be 300 x 80 ft., three stories.

The Chalmers Motor Company, Detroit, which commenced operations in 1908 with one building 60 x 400 ft., three stories, has more than trebled the size of its plant in the last two years and now has a plant of more than 30 acres occupied by three main manufacturing buildings, each 60 x 400 ft., four stories, together with 12 other structures, consisting of test sheds, boiler and engine buildings. The erection of a third manufacturing building has just been completed. This structure is four stories and is to be used exclusively as a machinery building. In this building is installed approximately \$250,000 worth of automobile

manufacturing machinery consisting of machine tools and equipment. As subsidiary of the Chalmers company, the Fairview Foundry Company has been incorporated, the plant of which is adjacent to that of the Chalmers Motor Company. In this foundry will be made all castings used in the manufacture of Chalmers motor cars. The plant is absolutely new throughout and is being equipped with the most modern machinery for the casting of grey iron, brass and aluminum. It consists of two buildings, one for aluminum and brass work and one for brass and iron casting. The company also has in the course of erection a concrete and steel structure 50 x 150 ft., which will be used for the heat treating of steel.

The Seitz Automobile Transmission Company, Detroit, has plans prepared for three factory buildings to be erected at Wyandotte, Mich., the largest of which is 60 x 320 ft. The building will have elevator service and will be equipped with machinery for the manufacture of power wagons, trucks and automobile transmission, and will be ready for occupancy in September.

The Michigan Smelting & Refining Company, Detroit, has purchased a site of five acres upon which it will erect a new plant consisting of three monitor steel buildings, 60 x 300 ft., for smelting and refining nonferrous metals. Final details in construction have not been worked out, but it is intended to construct a modern plant to be equipped with every labor-saving device that can be used to advantage. The company is now experimenting with different furnaces for melting and refining material with the intention of adopting them if they prove satisfactory. A larger and more completely equipped laboratory than that now in operation at the present works of the company, located at 835 Superior street, will be built in order to control the metals from the various departments. Joseph Sillman is general manager of the company and Albert J. Hall metallurgist.

The Reo Motor Car Company, Lansing, Mich., recently mentioned, expects to have its list of tools required in its new factory made up at an early date. It is understood that about \$50,000 will be spent for equipment.

The Kells Foundry & Machine Company, Adrian, Mich., is contemplating the removal of its factory to East Gary, Ind., but no definite settlement has as yet been reached.

The Sintz-Wallin Company, Grand Rapids, Mich., engineer, founder and machinist, has been reorganized to take care of its constantly increasing business and such improvements as it will be found necessary to make by the gradual increase of its business. The company, advises, however, that it does not contemplate making any changes at the present time.

The Peninsular Stove Company is erecting an addition to its plant, 100 x 100 ft., six stories, which it expects to have completed and ready for occupancy within the next two weeks.

The Stanley Power Wagon Company of this city has been incorporated with \$10,000 capital stock to manufacture automobiles and accessories. John C. Shaw and H. A. Douglas are among the incorporators.

The Comet Electric Stove Company of this city has been incorporated with \$50,000 capital stock to manufacture electric stoves and heaters. The incorporators are James D. Lamont, Ellsworth S. Bryant and Franklin S. Prusia.

### New England

BOSTON, MASS., June 21, 1910.

The machinery and supply markets are without features which distinguish them from the last few weeks. A fair volume of business is being transacted. The hot weather undoubtedly has its usual influence upon the trade, and every one seems to expect the customary relative dullness which comes with the two mid-summer months. The textile mills are buying some machine tools and other equipment for their repair shops, this trade being especially good in Rhode Island and in the very important cotton cities, Fall River and New Bedford. The dealers who serve the mills comment on the growing tendency to buy first-class tools, none of the old niggardly policy being shown. In several cases high-grade Universal milling machines have been installed, which with other very modern machines afford a remarkable contrast to the equipment of the older repair shops which never possessed any but second-hand machinery. The textile machinery builders continue to be very prosperous. While the cotton mills are curtailing production because of the high price of their raw material, and the woolen mills complain strongly of a stagnant market, nevertheless, they are large buyers of machinery, both for new mills and for additions to existing plants and for replacements. These people are also spending large sums of money in enlarging and improving their power plants, which has been especially beneficial to the New England boiler manufacturers.

## THE MACHINERY MARKETS

In going around the country one hears a good deal of the dullness of the jewelry manufacturing business of Providence and vicinity. The condition in that great jewelry center is not so distressing as the rumors have made it appear. Of the hundreds of establishments, some are very busy and others are dull. While the average is not wholly normal, still it would take no great increase to make it so. The machinery builders, who number the jewelry people as important customers, complain that buying is not brisk, though it is by no means as dull as it was a year ago.

The Brown & Sharpe Mfg. Company, Providence, R. I., has increased its producing capacity beyond any previous record. The present payroll contains close to 4600 names. The new building will be ready for occupancy in the fall, affording 60,000 sq. ft. of new space, which will be devoted to machine shops. As soon as this building receives its working force the number of employees will well exceed 5000.

C. M. Wheaton, 9 Calendar street, Providence, R. I., manufacturer of power transmission machinery, is making large increases to its manufacturing equipment. The increase in business has been so rapid that tentative plans have been made for the establishment of larger works, probably by the construction of a building for the exclusive tenancy of the company. The special product is a friction countershaft.

The Pilgrim Foundry Company, South Boston, Mass., manufacturer of stoves, ranges, sinks, &c., has made no plans for rebuilding its foundry which was destroyed by fire a month ago, entailing a loss of \$25,000. At present the company is located with the Highland Foundry Company, Boston, where it expects to continue business for some time.

The Hartford Automatic Arms Company, Connecticut Mutual Building, Hartford, Conn., has incorporated under a Connecticut charter with authorized capital stock of \$100,000 to manufacture an automatic pistol, the invention of John Keith, a foreman in the works of Colt's Patent Fire Arms Mfg. Company of that city. The incorporators are John Keith, Mortimer L. Bristol, W. A. Sanborn, Lucius F. Robinson and Gerald W. Hart, all of Hartford.

The T. C. Richards Hardware Company, Winsted, Conn., is completing the rebuilding and enlargement of the factory which was destroyed by fire several months ago.

A report from Danbury, Conn., states that the control of the Danbury & Bethel Street Railway Company will pass shortly to the Morton F. Plant syndicate, which is to build the new Bridgeport & Danbury electric line, a condition of the sale being construction of this new and important railway link. Another announcement of trolley building is that work on the Norwich, Colchester & Hartford Company's road will begin within a month.

The Hart & Hegerman Mfg. Company and the McCue Company, Hartford, Conn., have plans for large extensions of their works.

The published plans of the Springfield Foundry Company, Springfield, Mass., for its new plant at Indian Orchard, comprise a main building 138 x 155 ft., and a charging room 24 x 44 ft. The structures will be of brick and steel.

Additions to manufacturing plants outside of the metal lines include the following: Danbury & Bethel Gas & Electric Light Company, Danbury, Conn., addition to power station in that city, comprising steam turbine and generator and additional boilers of 600 hp.; F. H. Coyne Company, Foxboro, Mass., factory, 50 x 150 ft., two stories; Indian Orchard Company, Indian Orchard, Mass., mill, 45 x 198 ft., three stories; Wm. W. Brown, Worcester, Mass., textiles, factory, 40 x 216 ft., one story; Dr. Johnson Company, Mansfield, Mass., crackers, factory, 26 x 100 ft., four stories, and smaller buildings, concrete construction to be employed; Joslyn Mfg. Company, merino mills, R. I., addition to factory; Fletcher Mfg. Company, Providence, R. I., textiles, addition, 21 x 36 ft., two stories; American Textile Company, Pawtucket, R. I., addition to lace mill, 60 x 220 ft.

The International Machine & Screw Company, Springfield, Mass., announces that it will begin business with 12 sets of its new type of machinery, and will manufacture both machine and wood screws.

The Tribe Automatic Headlight Company, Worcester, Mass., is organizing to manufacture a headlight for use on electric cars, the feature of the device being that its ray is kept on the track when rounding curves as well as on straight stretches. The inventor is George T. Tribe of that city.

L. H. Rhodes, Hartford, Conn., manufacturer of shapers, has begun the production of a line of motor cycles. The machine is known as the Marathon. The preliminary stages of manufacturing are now concluded and the first machine has passed through the works to completion.

The Eastern Machine & Stamping Company, Providence, R. I., manufacturer of special machinery and tools and metal stampings, has reorganized with Benjamin H.

Gault as assistant treasurer and manager and James H. Gault as superintendent. The company specializes on stampings of sheet steel, brass, copper and aluminum, and the punches, dies and tools required in their manufacture.

Bay State Electro Plating Company, Gardner, Mass., will build a new factory, 32 x 48 ft., two stories.

The William J. Smith Company, New Haven, Conn., manufacturer of the One-Lock adjustable reamer, has changed its corporate name to the One-Lock Reamer Company. Joseph Swift is president; Samuel Swift, secretary and treasurer, and W. B. Gardiner, superintendent. The company is completing some additions to its plant which were made necessary by the increased demand for its reamers.

The School Committee of the town of Revere, Mass., will open bids July 1 for furnishing and installing new boilers and otherwise improving the heating system of the Schurtleff School.

The Crocker-Wheeler Company has moved its Boston office from 4 Post Office square to the Boston Safe Deposit & Trust Building, Devonshire and Arch streets.

### Milwaukee

MILWAUKEE, WIS., June 20, 1910.

The demand for machinery has eased off somewhat, so far as the actual bookings are concerned, but inquiries continue fairly liberal. It looks now as though this would be the most active summer local manufacturers and dealers have had for a number of years.

Some shops have been severely handicapped by the lack of sufficient skilled labor, and mechanical efficiency has become of greater importance than ever before. The result is, and will continue to be, closer attention to every detail of plant equipment, with constant "tuning up" of machinery and the substitution, as often as practicable, of improved types of apparatus for those of older, less efficient design. In this connection it is noteworthy that the smaller or medium sized concerns are taking better care of their plants than the larger corporations, while for the total amount of capital involved their purchases undoubtedly aggregate considerably more.

The motor car plants and manufacturers of automobile parts, accessories, &c., continue to take skilled labor at advanced wages, and the papers in the different industrial centers have been filled with anonymous display lines inviting such operatives to call at various hotels, indicating that employment agents for the concerns mentioned are going through the State on this mission. It is also asserted that the Federal Government is quietly but persistently endeavoring to secure mechanics for the navy yards, as well as engineers, electricians, &c., for service in all departments. In the local field the fabricating plants seem to have the most urgent need of men, both for shop and erection work. The Wisconsin Bridge & Iron Company, Worden-Allen Company, Milwaukee Bridge Company and others are openly advertising for men, laborers included, day after day.

Preparations are now in progress to make Wisconsin a much larger center for the manufacture of electric generators, motors, controllers, converters, transformers and detail apparatus. The facilities at present existing for the production of such equipment, despite the fact that they have been at least trebled within two years, are proving inadequate to meet the demand, which is growing by leaps and bounds. Considering that more prime movers are turned out here annually than in any other State of the Union, the development of a corresponding quantity of electrical machinery is the logical sequence. The result will, of course, be a widening of the local market for patternmaking tools, foundry, machine and forge shop equipment, together with their various accessories, also for material of all kinds used in the metal working industries.

The Hirschberg, Williams-Washburn Company, Milwaukee, is preparing plans for a power plant to be erected and equipped by the Barber-Colman Company, Rockford, Ill.

The American Oxhydric Company, Milwaukee, installed one of its equipments, the operation of which has been described in *The Iron Age*, in the plant of the Racine Iron & Metal Company, Racine, Wis., for cutting heavy scrap.

The R. J. Dowd Knife Works, Beloit, Wis., has found the past six months very favorable for the sale of its product in the Southwest, where it is represented by the C. E. Rosenbaum Machinery Company, Little Rock, Ark.

It is reported from Downing, Wis., that a concern known as the Starr Automobile Company, with whose organization the writer is not acquainted, has had plans drawn for a manufacturing plant, 90 x 200 ft., in which about 500 men will be employed from the outset. Information as to equipment details is lacking.



## THE MACHINERY MARKETS

Steps will be taken shortly to replace the hoisting engine, crushing plant and furnace of the Homestead Mining Company, at Platteville, Wis., which were practically destroyed in a recent fire.

The Jefferson Auto Supply Company, recently organized at Jefferson, Wis., by William Wagner and Frank Lamach of Two Rivers, Wis., will establish a machine shop and factory for the production of various automobile supplies, as well as repair work.

The expenditure of \$50,000 for pumping machinery is reported to have been decided upon by the city of Sheboygan, Wis.

The Manitowoc Boiler Works, Manitowoc, Wis., will furnish the steel digester shells for the Wausau Paper Company's plant at Wausau, Wis.

Contract for the new three-story frame factory, 30 x 140 ft., of the Lake Superior Knitting Works, Appleton, Wis., has just been let. The equipment will include boilers for power and heating service, operating machinery, &c.

The annual meeting of the Wisconsin Society of Stationary Engineers opens to-day at Oshkosh, and will be followed by a trip to La Crosse, where an excursion on the Mississippi River is planned.

The Kissel Motor Car Company, Hartford, Wis., is about to take bids on the construction and equipment of a large factory building, the location of which is to be at an Iowa point. The F. M. Emerson Company, Milwaukee, will be in charge of the work.

The boiler house and main building of an old pulp mill at Ladysmith, Wis., will be remodeled for the use of the Menasha Paper Company, Menasha, Wis., which already has a large plant of recent construction in operation there.

Contracts have just been let for new county buildings at Marsfield, Wis., after plans prepared by Van Ryn & De Gelleke, Milwaukee, the mechanical equipment of which will include a large steam plant for power and heating. The boilers and other apparatus needed have not yet been purchased.

A gas producer house and separate power plant will be built in connection with the Northern Glass Works, of which Wm. Franzen & Son, Milwaukee, are owners, but bids will not be taken for two or three weeks and equipment may not be bought until later.

The Shadbolt & Boyd Iron Company, Milwaukee, has purchased the vehicle wood stock department of the Estabrook-Skeele Company, Chicago.

A large new timber cutting plant, which will probably be equipped for motor drive, is to be built by the H. W. Wright Lumber Company, Merrill, Wis., to replace the structure that burned some weeks ago. For the present the company's business will be taken care of by another concern.

It is reported from Beloit, Wis., that following the erection of the four new buildings now in course of construction by Fairbanks, Morse & Co., the details of the new plant will be taken up. Most of the equipment for the latter will probably be supplied by the company itself.

The additions to the plant of the Phoenix Mfg. Company, Eau Claire, Wis., recently referred to, are now under way. Some of the equipment has been provided for.

The enlargement of the municipal power and pumping plant at Wausau, Wis., will be definitely entered upon and new machinery purchased as soon as it is decided whether to use steam or electric power.

The W. S. Seaman Company, Milwaukee, has been incorporated for \$50,000 to carry on a plant for the manufacture of automobile bodies.

The Modern Steel Structural Company, Waukesha, Wis., whose steel fabricating shops have been crowded with orders for structural material, is also putting on the market a line of electric traveling cranes and steel derricks, which have met with much success in service.

The Wisconsin Bridge & Iron Company, North Milwaukee, Wis., has been awarded the contract for all of the structural steel and iron to be used in a new building for the Mutual Auto Company, Duluth, Minn.

The contract has just been let for erection of the main building of the Wausau Sulphate Fibre Company, Wausau, Wis., which will be two stories, 80 x 520 ft., and arranged throughout for electric motor drive. Some of the equipment needed has already been provided for, and the remainder will be purchased at intervals during the construction of the plant.

The factory of the Two Rivers Woodenware Company, Two Rivers, Wis., which is now out of business, will be taken over in the near future by some other concern which can make use of its facilities after rearrangement of the equipment and some additions.

The International Harvester Company has completed plans and purchased a site for the new foundry, 150 x 750 ft., to be erected adjacent to its Milwaukee Harvester Works. It will be of brick and steel construction, with saw-tooth roof. Bids are also to be taken shortly for a four-story warehouse, which the same company has decided

upon building at Eau Claire, Wis. All contracts will be let from the company's main offices in the Harvester Building, Chicago.

The S. Freeman & Sons Mfg. Company, Racine, Wis., is completing its new pattern storage building.

A separate power house, equipped with boilers, generating set, &c., will be built in connection with the factory of the Waltham Piano Company, Milwaukee. The use of electric motors in the plant has been definitely decided upon.

A good many people have been here looking for the office of the Globe Seamless Tube Company. It is temporarily situated in a private house on the Trowbridge road, at what would correspond to Thirty-second avenue, a few rods north of the Greenfield avenue (Burnham street) car line. The large size of the plant to be built and its presumable need of an extensive line of equipment have been attracting machinery salesmen from all parts of the Central West.

The Milwaukee Machine Tool Company, Milwaukee, will erect a new factory on the site recently purchased at Sixtieth and Mitchell streets, West Allis. About \$50,000 will be spent in improvements and buildings; operations will commence immediately. Considerable new equipment will be purchased, details of which have not yet been worked out.

The Christiansen Metal Shoe Company, Racine, Wis., has been incorporated with a fully paid capital stock of \$25,000 to manufacture a metal shoe for those engaged in rough and wet work. The company has leased a factory and expects to be turning out its product in about 90 days. The officers of the company are as follows: Robert Christensen, president; Charles F. Remer, vice-president; Frederic Nielson, treasurer; T. P. Hardy, secretary.

George N. Hall, Pewaukee, Wis., manufacturer of hardware specialties, will remove his factory to Council Bluffs, Iowa, where he will have a more central location and larger manufacturing facilities. A new factory building, 24 x 80 ft., two stories, is being erected at Council Bluffs which will be occupied by Mr. Hall as soon as completed. The line now manufactured at Pewaukee will be increased by the addition of several newly patented articles, and the plating plant will be enlarged and equipped for brass and silver plating, in addition to copper, nickel and electro-galvanizing. An automatic wire forming machine will also be installed to shape the wire forms used in the articles manufactured.

### The Southwest

KANSAS CITY, Mo., June 20, 1910.

Dealers are at present following up opportunities presented in the equipment of shops by various electric railroad systems, short steam lines or industrial railroads in the Southwest. Unlike the lists of the large trunk lines, which are published first in the East, inquiries for the above named machinery are sent to the nearest equipment houses.

There has been for several weeks past an active movement all through the farming sections of windmills, pumps and small gasoline or oil engines used for well service and lifting water to reservoirs; while local shops have been busy with repairs for apparatus already in service. The farmers have a good deal of money this year which they can devote to such purposes, and the demand for pumping outfits of all kinds is increasing. Traction machines for field work, with more powerful motors than were formerly used, are also in very general service, with prospects for a doubling of the demand next season. This year many more machines could have been sold for spring and summer work if dealers at interior points had been able to make immediate delivery.

The Panhandle Automobile Company is completing a modern motor car factory at Quanah, Texas.

Bids will be received by the city of Apache, Okla., until June 27, for machinery for the municipal power plant.

Boilers will be needed in the re-equipment of the part of the plant of the Southwestern Refining Company, Big Heart, Okla., which was recently burned.

The Tolleson Coal Company, Headrick, Okla., is reported to be in the market for mining machinery.

From Wichita, Kan., it is reported that E. H. Vreth has had plans drawn by F. F. Parsons of that place for a new factory building, the purpose of which is not stated.

The Texas City Transportation Company, Texas City, Texas, is planning to enlarge its power plant equipment by the installation of another generating unit.

The Imperial Iron & Steel Company, Gainesville, Texas, has been incorporated as successor to the Southwestern Iron & Steel Company, the name being changed to prevent confusion.

The Camden Power Company, recently organized at Camden, Ark., by T. J. Watts, will install an electric generating plant of considerable size.

The Ash Grove Lime & Portland Cement Company will compound one of the Corliss engines in its power plant by

## THE MACHINERY MARKETS

adding a low-pressure side having 46-in. cylinder and 22-in. stroke. The main offices are in Kansas City.

The Wichita Mfg. Company, Wichita, Kan., in addition to its machinery business has established a large trade in steel roll corrugating.

The Gregg-Fouts Mfg. Company, Kansas City, is considering an increase in its facilities for the production of metal screens.

Plans for a pumping plant and later on an electric generating station are under consideration by the authorities of Kaw City, Okla.

The Oklahoma Rod Company, recently organized at Tulsa, Okla., will build a plant 40 x 140 ft., for the manufacture of oil well supplies. W. C. Norris is president. He is also interested at Tiona, Pa., under the style of Wilber C. Norris.

A high pressure pump, with capacity of 750,000 gal. daily, will be purchased at Clay Center, Kan., by the Public Utilities Commission.

A combined electric power and refrigerating plant, which will be operated continuously during the 24 hours of the day, is to be installed by the Henryetta Electric Light & Ice Company, Henryetta, Okla.

The Harmony Mining Company, Elmer P. Merritt, president, which was recently organized at Joplin, Mo., will proceed to develop a large tract of zinc and lead ore property. Some machinery is understood to have been bought.

A large oil refinery will be built by the Texas Company at Houston, Texas.

Boilers, power and operating machinery will be installed by the Yoakum Washer Mfg. Company, Yoakum, Texas, in its factory, the capacity of which is to be further extended in the fall.

The Palmer Grate Company, Fort Scott, Kan., has been in receipt lately of numerous orders for its patented apparatus. Contracts include an installation to be made in the power plant of the Hastings Brewing Company, Hastings, Neb.

The Norman Sheet Metal Works recently put a well equipped plant in operation at Nevada, Mo.

William L. Tedford, Little Rock, Ark., is identified with plans for the erection of an automobile factory. The Tedford Auto Company is now in business there.

The American Paper Mfg. Company, Wichita, Kan., will commence work on its plant to be erected in West Wichita July 1. The construction of the plant will be done by the company under the direction of an experienced paper mill constructor and operator. Contracts for machinery to be installed have not been placed and probably will not be for 30 or 60 days.

The Wichita Railroad & Light Company, Wichita, Kan., is contemplating the erection of a car barn and machine shop of reinforced concrete at a cost of \$40,000, and expects to start construction work some time in August.

The City Council of Walters, Okla., has awarded a contract to C. A. Reese, Tahlequah, Okla., to construct water and sewer systems to cost \$66,000.

Burns & McDonald, Scarritt Building, Kansas City, Mo., have been given a contract to rebuild the water works and electric light plant at Slater, Mo. Bonds amounting to \$25,500 have been issued for this work.

The Kansas City Gas & Electric Company, Wichita, Kan., will erect a power plant in Wichita at a cost of about \$300,000. Sargent & Lundy, Railway Exchange Building, Chicago, are the engineers in charge.

The Victor Auto Company, St. Louis, Mo., is about to erect a two-story addition to its factory, 90 x 110 ft.

The Charter Oak Stove Company, St. Louis, Mo., is having plans drawn for a foundry building of very large size, which is intended to be the best equipped of any of its kind in the West. Both gray and malleable iron castings will be made.

The F. E. Schoenberg Mfg. Company, St. Louis, Mo., has let contracts for a three-story factory, 75 x 145 ft., to be used for the production of metal screens. The location secured for it is on De Kalb street, near Russell avenue.

Purchases of machinery will be made some time this summer for the new municipal power plant at Tipton, Mo., bonds for which were recently voted.

The veneer cutting mill of Sigler, Brorein & Co., Parma, Mo., which was recently destroyed by fire, is being rebuilt for greater capacity, and the best types of modern machinery, with power equipment, will be installed.

months. Owing to the handicap of hot weather, the third quarter can hardly be expected to show as good figures, but by October 1 trade will undoubtedly reach large proportions.

A department of the machinery trade which remains very active, as a result of the constant need of replacements is the sale of stationary and revolving screens, perforated metal, wire gauze, &c., for handling ore, coal, rock, gravel, phosphate and the products of numerous factories and mills. Jigs, log washers and other separators for concentration processes of various descriptions also find an excellent market in the different industrial districts. With most of these large quantities of water are necessary and valveless pumps, usually of the centrifugal type, are considerably in demand.

The Alabama Fuel & Iron Company, Birmingham, Ala., has increased its capital stock by \$1,000,000, expecting to make important extensions.

J. V. Mitchell, Harriman, Tenn., will install a new timber sawing outfit on property near Oakdale, Tenn., owned by Laycock, Chapman & Chesley, whose headquarters are given as Buffalo, N. Y.

A shop for repair work will be provided by the K. E. Auto & Electric Company, in connection with a garage to be erected at Gadsden, Ala.

The Samson Power Company, Clinton, N. C., reference to whose organization was made in *The Iron Age* June 9, will install a high speed engine, alternating current generator of 75 kw. or more. Second-hand machinery may be considered.

W. T. Brown, Ragland, Ala., who is organizing the Brown Cotton Mills, is planning construction of the necessary buildings, which will include a steam-electric plant of 500 hp. Coal will be mined on property adjacent to the mills.

The General Chemical Company will install two large variable speed motors, operating on direct current, for driving machinery in its works at Pulaski, Va.

The erection of an elevated steel water tank, with improvements in the city pumping system, is proposed at Montezuma, Ga.

The sawmill of the Dennis Simmons Lumber Company, Kenly, N. C., which was recently burned, including separate power plant and pump house, will probably be reconstructed on a more comprehensive scale, and motor drive used on some of the machinery.

The Illinois Central Railroad Company is planning to build a large pumping station at McComb City, Miss., to take water from a system of reservoirs about to be constructed and distribute it to the roundhouse, machine shops and other parts of the company's property, including the power house.

The construction of an electric power and pumping station will be decided upon this week at Ellore, S. C., where preliminary plans for the purpose have been under consideration.

The plant of the Etowah Power Company has been acquired by the Georgia Power Company, Atlanta, Ga.

The Charleston Mining & Mfg. Company, Charleston, S. C., will install some new machinery on its property at Mt. Pleasant, Tenn., including a rotary steel frame dryer about 50 ft. long.

The Park Mfg. Company, Charlotte, N. C., includes among its specialties a line of pumps and heaters for boiler feed which have been very successfully placed this season in steam generating plants of the Southern industrial districts. The company's electric elevators are also coming into very general service in the cities where current can be obtained from the hydroelectric plants that are now so numerous in this section.

A return tubular boiler of 80 to 100 hp. will be installed by the Raymond Oil & Gin Company, Raymond, Ga.

W. B. Cook, who has been president and general manager of the Cook-Lewis Foundry Company, Greensboro, N. C., has severed his connection with that company, and announces that he will begin at once the erection of a modern foundry on the site opposite the Newman Machinery Company, recently purchased by him. The building will be of brick, one story, and the equipment will be modern. About 25 men will be employed.

The Seaboard Air Line Railway is expected to issue at an early date a list for the machine tools that will be installed in its new wheel, rod, tender and boiler shops at Portsmouth, Va. A. J. Poole is superintendent of motive power.

The municipality of Oxford, Miss., R. S. Adams, Mayor, expects to make extensions to the water works and electric light plant for which a \$30,000 bond issue has been made. The improvements include a 200,000-gal. reservoir, motor, pumps, &c.

The Osage Iron Works has been incorporated at Memphis, Tenn., by T. F. McGee, H. Mengle, A. D. Bellamy, Thomas Hannibal and M. E. Ketchum. It has taken over a small existing plant which will be enlarged for the purpose of making general machinery repairs.

### The South

NASHVILLE, TENN., June 20, 1910.

Recent sales of machinery have been light.

From present indications the second quarter of the year will tally up well as compared with the first, and in not a few lines its record will exceed that of the opening three



## THE MACHINERY MARKETS

M. C. McCorkle & Sons, Richmond, Va., purchased a large tract of timber land in Nelson County, Va., and will erect a sawmill, for which considerable equipment will probably be required.

### The Northwest

ST. PAUL, MINN., June 20, 1910.

Inquiries for machinery have diminished, but local manufacturers, and more especially dealers who carry good-sized stocks, are getting the advantage of the extraordinary rush of building operations in every populous community of the Northwest. Scarcity of labor is also compelling the use of improved mechanical appliances, and the tendency to substitute machines for men is rapidly increasing; hence the close of the present building season will witness a greatly widened market for construction appliances actuated by power, such as diaphragm pumps, mixers, hoists, derricks, &c.

A noteworthy feature of future activity will be the extension of motor vehicle building, including machines for city service and others adapted to use in the agricultural districts. Announcements can be made shortly in relation to a number of motor truck and wagon factories, the erection of which is now contemplated at various points in Minnesota and Wisconsin. These will for the most part start with only moderate capital and without any extensive line of equipment.

Arrangements have just been completed for the erection of the new two-story brick machine shop, previously noted, which the Northern Pacific Railway Company is to add to its repair plant facilities. The location is at North Branch, Minn.

Plans of a modern incineration plant for Virginia, Minn., have been prepared at the Hopkins, Minn., factory of the Decarie Incinerator Company. The scheme to be adopted may include the generation of steam for use in city pumping.

The installation of a municipal pumping plant is under consideration at Belfield, S. D.

The Merceen-Johnson Machine Company, Minneapolis, is placing on the market a friction clutch designated as the "Gagnon" type, the feature of which is an independent disk that is said to eliminate the cause of most clutch troubles. It can be used with pulleys, sprockets, couplings, gearing, sheaves, &c.

The Avery Company, Fargo, N. D., will erect a new building, 75 x 220 ft., of brick and steel construction.

A new mill to be erected at Harlowton, Mont., by W. H. Smith, will have two large steel storage tanks. Contracts for the operating machinery have just been let.

The Crown Iron Works Company, Minneapolis, is putting on the market a very compact saw sharpening machine, which can be quickly adjusted for grinding either bevel or square teeth, and takes relatively little power or skill for operating.

In all of the district surrounding Anaconda, Mont., there will henceforth be a large market for electric motors, as power from the plant of the Great Falls Water Power & Town Site Company, of which John D. Ryan, Great Falls, Mont., is president, will be available about July 15.

The Minneapolis Motor Truck Company is considering the erection of a factory building with about 50,000 sq. ft. of floor space on two floors. Considerable machinery has been recently purchased by the company, but its requirements will probably demand additional purchases during the current year.

The American Gas Machines Company, Albert Lea, Minn., has awarded a contract for a new factory building to cost \$55,000, and is in the market for steam heating plant, sprinkler system, electric elevators, electric motors, turret lathes, polishing lathes, drill presses, vises and bench tools.

### North Pacific Coast

PORTLAND, ORE., June 16, 1910.

Mining companies of the placer districts and back in the mountains are contributing quite extensively to the support of the market, and the lumber interests continue to place orders for new equipment and repairs, although not to as large an extent as they did during the spring months.

At the ports on the rivers and sounds marine work occupies the attention of many shops, some of which devote themselves almost entirely to it. Owners of vessels calling at coast cities from all parts of the world leave a good deal of money, and the Government has also helped out this season with some good-sized contracts.

While it is no uncommon matter for manufacturers along the Atlantic seaboard to market a considerable percentage of their products here, the reverse is rare. Therefore, it is especially interesting to note that the Pacific Coast Pipe

Company, Seattle, Wash., has just received an order for 2 miles of 8½ ft. dia. penstock for a hydroelectric power development in the State of New York, the pipe being similar to that installed by the Great Northern Railway in Tumwater Canon. This company has also been given a large order within the past few days for the wood pipe to be used in the extensive water works system planned for Richmond, B. C.

The Coast Cement Company recently opened offices in the Mohawk Building, Portland, Ore., and will proceed with plans for establishing a plant in which to manufacture cement blocks. Not all of the machinery required has as yet been bought.

A large motor driven air compressor to operate drills will be provided by the Lead Silver Mining Company, Wallace, Idaho, in order to extend operations in the mine. The concentrating plant will also be increased in capacity to 500 tons daily. An electric hoist has just been installed. This is a property for which there will be more or less buying of equipment for some time to come.

There is now in force in the State of Washington a law which makes it a criminal offense to operate a power plant, using coal or wood for fuel, without a spark arrester on the smokestack. It has been announced by the authorities that they will rigidly enforce this statute where there is danger from fire on account of sparks.

Jergens Bros. have just completed a modern timber cutting plant at Priest River, Idaho, which will be a large user in future of mechanical and electrical equipment of various kinds.

The Willamette Iron & Steel Works, Portland, Ore., is making a specialty of manganese steel sheaves for use with heavy chains. These are practically indestructible, showing very little wear in service.

The contract for a large incineration plant at Vancouver, B. C., has been awarded the Public Works Engineering Company, Portland, Ore.

The Coast Iron & Machine Works, Tacoma, Wash., recently incorporated for \$5000, has leased a building from the city of Tacoma, 50 x 120 ft., which it has equipped for general machine work. A radial drill and boring mill will be purchased and installed in the near future. The officers of the company are: John A. McRae, president; Morris E. Smith, secretary; Arthur J. Rutherford, treasurer.

### San Francisco

SAN FRANCISCO, CAL., June 16, 1910.

Since the first of the month labor troubles have developed among the machine shops at several other points, both north and south, where the leaders of union labor are endeavoring to bring about an 8-hour day schedule similar to that in San Francisco, besides other concessions from the employers. It is reported that the demands have been granted by a few employers at Seattle. The efforts of the unions are being concentrated on Los Angeles, where about 2000 men are on strike. The Los Angeles shops have a large amount of work on hand, largely in the line of oil equipment, and the strike there has brought more inquiries to the San Francisco market. Several local operators state that if it is found impossible to place San Francisco on an equal labor basis with other Coast cities they will practically cease to compete.

The market for metal working tools is as active as could be expected under the circumstances. Aside from inquiries from the Government and the Southern Pacific Railroad there is practically no demand for large tools and the movement of smaller equipment is limited. A few local shops are working at capacity, and are buying in a small way, but the majority here as well as at other points are not disposed to purchase until the labor difficulties are settled.

Local merchants are bidding on the requirements of the Mare Island Navy Yard, which includes, in addition to a number of small machines, a 50-ft. crankshaft lathe, weighing about 160 tons, a 20-ft. boring mill and a 14 x 24 ft. planer.

The Southern Pacific Railroad is erecting a large car shop on the Oakland mole, and is now taking figures on the machinery required. The tools include a large set of rolls, punches and several shears, including a belting shear and rotary splitting shear.

There is little inquiry for large woodworking machinery, though purchases of small machines, boilers, &c., for the lumber interests are numerous. The principal purchases of the mines are of pumping, compressing and hoisting machinery, with gas and electric power taking precedence over steam. Most heavy mining machinery orders are placed in other markets.

Electric, gas and water power units are in good demand, though individual orders are generally small. Both foreign

## THE MACHINERY MARKETS

and domestic business is well sustained with the local gas engine manufacturers, some of whom are getting many orders for agricultural purposes.

Numerous automobile repair shops are installing small machine tools, second-hand equipment being frequently purchased for this purpose. There is a fair inquiry for second-hand machinery of most descriptions.

The Golden State & Miners' Iron Works, San Francisco, is working on two dredges, to be used in levee work on the San Joaquin and Sacramento rivers. They are to have booms 175 ft. long, with 1-ton buckets of 5-yard capacity.

The George E. Dow Pump & Engine Company, San Francisco, is working at full capacity, with numerous orders for pumps and condensers for the oil fields. The shop equipment is being increased by the addition of a new molding machine and a number of tools. This company has an order for a duplex compound steam pump, capacity 1200 gal. per min., lift 300 ft., for the Tombstone Consolidated mine in Arizona; also one for a complete outfit of pumping machinery for a cargo oil steamer being built by the Newport News Shipbuilding & Drydock Company.

The Modern Auto Machine Shop has been incorporated at San Diego, Cal., with a capital stock of \$25,000, by C. A. L. M. and E. A. Orr and H. B. Miller.

The United States Navy tug Iroquois is being equipped with new Babcock & Wilcox boilers, and will have an oil burning system installed, at the Mare Island Navy Yard.

The Tonopah & Goldfield Railroad has started work on its new shops at Goldfield, Nev.

The Arizona Mine Supply Company, Prescott, Ariz., will install a large pumping plant for the Chino Valley Land & Cattle Company.

The Western Pipe & Steel Company, San Francisco, successor to the Francis Smith Company, manufacturer of riveted pipe, has secured a location for a factory at Richmond, Cal.

The Yosemite Stone Company, Exchequer, Cal., is installing a No. 8 Gates crusher and a 10-ton locomotive crane built by the Union Iron Works.

The Globe Grain & Milling Company, San Francisco, contemplates the installation of a complete grain handling equipment on the local water front.

The city of Oakland, Cal., will be in the market shortly for a gyratory crusher for the street department.

Bids are being received for general repairs to the United States Army transport Thomas. The work will probably amount to about \$250,000.

The Los Angeles Gas & Electric Company, Los Angeles, Cal., is preparing to install a number of new boilers in its Alameda street plant.

The Anaheim Sugar Company, recently incorporated at Los Angeles with a capital of \$750,000, is planning to erect a large sugar mill near Anaheim, Cal.

The G. W. Price Pump & Engine Company has taken an order for several 30-in. double suction centrifugal pumps for the use of the Pacific Light & Power Company at Redondo, Cal.

It is reported that the Yuba Construction Company, Marysville, Cal., manufacturer of gold dredges, will add a number of tools to its shops.

### The Farther Central West

OMAHA, NEB., June 20, 1910.

The center of manufacturing is moving Westward at a faster rate than in previous years, owing to recent developments in Nebraska, Colorado and Utah, where many new enterprises have been started this season to supply the local demand. Omaha has, consequently, gained in importance as a distributing center and the trade here is keeping up much better than is ordinarily the case after warm weather has come to stay. From Denver and Salt Lake City reports are also encouraging.

A matter of considerable importance to this section, owing to the fact that the railroad connections radiate from Omaha, is the present rejuvenation of the Black Hills mining districts, where machinery and supplies in considerable quantity are needed for further development work.

The Hoeschen Mfg. Company, Omaha, is putting on the market an electrical device operated by a magneto, which gives warning of the approach of trains or electric cars at railway crossings, or of switch engines in the yards of industrial plants. The feature of this mechanism is the fact that it is set in motion merely by track depression, thereby obviating the use of batteries, track circuits, &c., and eliminating any possibility of false signals. For crossings in the grounds of iron and steel works, machinery building plants, quarries, &c., where employees are constantly passing in front of yard engines, such a device would tend to materially lessen accidents.

New tools for repair work will be required in the equipment of the Des Moines City Railway's new car barns and shop at De Moines, Iowa.

A shop for repair work, with the equipment usual to plants installed by interurban railway systems, will be erected by the Lincoln Traction Company, Lincoln, Neb., in connection with new car barns.

A new gas generating plant will be built at Hastings, Neb., for the Hastings Light & Heat Company.

The Bettendorf Axle Company is having a large earth fill made on its property in Bettendorf, near Davenport, Iowa, in preparation for new construction.

A plant is to be built at Rockford, Iowa, by the Rockford Brick & Tile Company, which will be 100 x 185 ft., and equipped with modern machinery, including a Corliss engine of 300 hp., to drive line shafting, or a dynamo for the generation of electric power.

The Western Refrigerator & Mfg. Company, which has recently organized at Colorado Springs, Colo., will establish a factory.

The Sheridan Electric Light & Power Company, Sheridan, Wyo., will install additional machinery, including a synchronous motor generator set of 350 kw.

Through the efforts of the Commercial Club, Des Moines, a new stove factory is to be erected in that city by the Model Stove Company, whose present address is given as Indianapolis, Ind.

New machinery will be required for the plant of the Williamsburg Brick & Tile Company, Williamsburg, Iowa, which is to be enlarged.

The Garfield Smelting Company, whose offices are in the McCormick Block, Salt Lake City, has put in operation to its full capacity the new smelter at Garfield, Utah, which is one of the most modern and among the best equipped in the world.

The McCook Machinery & Iron Works, McCook, Neb., recently organized in that city, advises that it now has in operation a general machine, boiler and blacksmith shop equipped to do all kinds of metal repair work, in which it has installed over \$3000 worth of machinery and tools. The firm proposes putting in a foundry next spring, when considerable heavy equipment will be purchased and installed.

### Government Purchases

WASHINGTON, D. C., June 20, 1910.

The Isthmian Canal Commission circular No. 591 calls for bids to be opened July 18 for one pneumatic hoist, gasoline motor, steel bars, &c.

The Paymaster-General, Navy Department, Washington, will open bids June 28, under schedule 2578, for one standard gauge compressed air locomotive and one accumulator, to be installed at Hingham, Mass.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids June 14 for the following:

Class 1, one horizontal steam driven ice machine—Bidder 154, Hugo, Bernard & Roelker Company, New York, \$4775; 186, Vermilye & Power, New York, \$5500.

Class 21, one belt driven pipe cutting and threading machine—Bidder 56, the Drew Machinery Agency, Manchester, N. H., \$700; 86, Harron, Ricard & McCone, San Francisco, Cal., \$662; 87, Holbrook, Merrill & Stetson, San Francisco, Cal., \$689; 90, Henshaw, Bulkley & Co., San Francisco, Cal., \$693; 103, Jerecki Mfg. Company, Erie, Pa., \$1229.60; 110, J. B. Kent, Baltimore, Md., \$684; 127, Manning, Maxwell & Moore, New York, \$708.70; 186, Vermilye & Power, New York, \$613.

Class 100, one pneumatic hoist—Bidder 47, the Chicago Pneumatic Tool Company, New York, \$400; 52, Detroit Hoist & Machine Company, Detroit, Mich., \$245; 99, Ingersoll-Rand Company, New York, \$254.70; 190, Weir & Craig Mfg. Company, Chicago, Ill., \$250.

Class 101, one pneumatic hoist—Bidder 47, the Chicago Pneumatic Tool Company, New York, \$200; 52, Detroit Hoist & Machine Company, Detroit, Mich., \$180; 99, Ingersoll-Rand Company, New York, \$254.70; 190, Weir & Craig Mfg. Company, Chicago, \$172.

Class 102, one pneumatic hoist—Bidder 47, the Chicago Pneumatic Tool Company, New York, \$168; 52, Detroit Hoist & Machine Company, Detroit, Mich., \$150; 99, Ingersoll-Rand Company, New York, \$172.10; 190, Weir & Craig Mfg. Company, Chicago, \$245.

Class 131, one 2½-ft. arm plain radial drill—Bidder 65, Fairbanks Company, Washington, D. C., \$588; 110, J. B. Kent, Baltimore, Md., \$855; 127, Manning, Maxwell & Moore, New York, \$800; 136, Niles-Bement-Pond Company, New York, \$675.

Class 132, one full universal radial drill—Bidder 65, the Fairbanks Company, Washington, \$1438; 110, J. B. Kent, Baltimore, Md., \$1550; 127, Manning, Maxwell & Moore, New York, \$1475; 136, Niles-Bement-Pond Company, New York, \$1575.

Class 167, one motor generator set—Bidder 44, the Crocker-Wheeler Company, Ampere, N. J., \$320; 57, Diehl Mfg. Company, Elizabethport, N. J., \$386; 67, Fort Wayne Electric Works, Fort Wayne, Ind., \$390; 91, Holtzer-Cabot Electric Company, Boston, Mass., \$450.

The American Steel Foundries, with general offices in Chicago, which has recently bought considerable ground adjacent to its Alliance Works at Alliance, Ohio, does not intend to make any additions to that plant at present.



## The Westinghouse Electric & Mfg. Company

The report of the Westinghouse Electric & Mfg. Company for the fiscal year ending March 31 is given below. It shows an increase in the total business of \$8,500,000 over the previous year and the net income was nearly \$4,000,000 in excess of the year previous:

### Income and Profit and Loss

Gross earnings, shipments billed.....	\$29,248,682.33
Factory costs, including all expenditures for patterns, dies, new small tools and other betterments and extensions; also inventory adjustments and all selling, administration, general and development expenses.....	25,695,704.00
Net manufacturing profits.....	\$3,552,978.24
Other income: Interest and discount.....	\$388,539.59
Dividends and interest on sundry stocks and bonds owned.....	478,810.33
Miscellaneous—royalties, &c.....	749,211.59
	1,616,561.51
Total income.....	\$5,169,539.75
Deductions from income: Interest on bonds and debentures.....	\$1,112,320.01
Interest on collateral notes.....	496,000.00
Miscellaneous interest.....	80,863.12
Property and plant depreciations charged against income.....	243,522.07
Miscellaneous.....	176,170.50
	2,108,875.72
Net income—surplus for the year.....	\$3,060,664.03
Profit and loss credits:	
Profit and loss—surplus, March 31, 1909.....	\$8,980,334.69
Profit on bonds purchased and retired through sinking fund.....	4,177.50
Profit on debenture certificates purchased.....	1,415.00
Miscellaneous.....	47,984.58
	9,033,911.75
Gross surplus.....	\$12,094,575.78
Profit and loss charges:	
Dividends on preferred capital stock.....	\$349,886.25
Depreciation of securities owned and accounts receivable.....	5,723,250.72
Reserved for accounts receivable.....	329,181.53
Miscellaneous.....	23,300.05
	6,425,627.55
Surplus, March 31, 1910.....	\$5,668,948.23

### Balance Sheet

Assets.	March 31.	
	1910.	1909.
Property and plant.....	\$14,974,629	\$14,578,390
Sinking fund for redemption of convertible sinking fund 5 per cent. bonds.....	627	48,234
Investments, securities other companies.....	27,206,346	29,844,259
Current assets:		
Cash.....	7,040,951	10,297,934
Cash on deposit to pay interest coupons.....	91,295	24,040
Special deposit.....	520	1,535,120
Notes receivable.....	3,766,915	3,650,999
Accounts receivable.....	9,169,502	6,951,700
Due from subscribers to capital stock.....	410,240	1,166,280
Raw materials and supplies, finished parts and machines, work in progress, &c.....	13,893,595	9,961,182
Charters, franchises, patents, insurance and taxes paid in advance, &c.....	6,083,605	6,827,212
Deferred charge—expenses incidental to issue of convertible sinking fund, 5 per cent. gold bonds.....	950,000	
Totals.....	\$83,588,225	\$84,885,471
Liabilities.		
Preferred stock.....	\$3,998,700	\$3,998,700
Common stock.....	36,720,487	36,636,125
Nonassenting.....	600	600
Funded debt.....	22,326,754	22,501,252
Collateral notes.....	8,720,000	8,702,703
Readjustment 5 per cent. notes.....	1,387,150	1,392,150
Notes payable.....	100,000	125,000
Accounts payable.....	2,509,154	1,168,791
Interest, taxes, wages, &c., accrued, not due.....	573,928	481,682
Advance payments received on account of orders.....	48,904	
Unpaid dividends on preferred stock.....	70,497	
Subscriptions to securities of affiliated companies.....	183,000	347,500
Reserve for inactive materials and supplies, adjustments of inventories, accounts receivable, &c.....	1,280,101	550,634
Profit and loss surplus.....	5,668,948	8,980,835
Totals.....	\$83,588,223	\$84,885,471

The report states: "It is believed that the satisfactory results reflected in this report are largely due to the policy of liberal expenditures for increasing the effectiveness of the selling organization and for development and improvement in design and in manufacturing methods. This policy has added considerably to the expenses for the year, but the increase in expenditures has been amply justified both in the increased volume of business and in the decreased cost of production."

The operations of the Westinghouse Lamp Company, Perkins Electric Switch Mfg. Company, Bryant Electric Company and the R. D. Nuttall Company are included. The business of each of these companies has so largely increased during the fiscal year as to call for an increase in their facilities.

With the quarter ended September 30, 1909, the payment of dividends was resumed at the rate of 7 per cent. per annum on the preferred stock, and there was also paid 3½ per cent. on account of the deferred dividends on the preferred stock which had been unpaid since September 30, 1907.

## Dominion Iron & Steel Company Plans

At the annual meeting of the Dominion Iron & Steel Company at Montreal, June 17, President Plummer said that this year is the last in which the Government will pay bounties on pig iron and steel ingots, while the bounty on wire rods will expire June 30, 1911. He had every confidence that at the next session of Parliament satisfactory tariffs on steel products would be provided in lieu of bounties. He estimated that 500,000 tons of pig iron and steel products is now imported to Canada each year, so that there is room for the product of the new plant now building at the Dominion works, details of which have already been given in these columns. The 120 new coke ovens will be ready in the fall. The two new open hearth furnaces, together having a capacity of 500 tons, will soon be completed. The new finishing mill, consisting of a continuous roughing mill and a Belgian train, is under contract to the Morgan Construction Company. A new machine shop and foundry are in contemplation.

The name of the new corporation in which the Dominion steel and coal companies are being merged will be decided on this week. It will probably be the Canadian Steel Corporation, the Hamilton, Ont., interests which are bringing about a merger of certain properties under that name, having agreed, it is stated, to withdraw their claim.

**Rapid Erection of the Gimbel Building.**—The Thompson-Starrett Company, 51 Wall street, New York, has completed the department store building of Gimbel Brothers at Thirty-second and Thirty-third streets and Sixth avenue, New York, and the owner took possession June 15. The contract was signed April 23, 1909, and the excavating work required five months. The first steel columns were erected in October, this branch of the work being so well handled that 11,000 tons of steel was erected in 400 working hours, a record entirely without precedent. Fireproof tile was delivered and set at the rate of 250 loads a day. The entire steel shell was completed December 6 and the corner stone was laid December 8. The actual erection of the completed structure has taken seven and a half months. The original completion date was August 1 next, and the extended completion date, owing to causes beyond control, was October 1 of this year, so that the Thompson-Starrett Company is over 100 days ahead of schedule. The building is 10 stories and has three stories below grade, contains 37 acres of floor space, 48 elevators and a sprinkler system. The transaction involves \$12,000,000 for land and building.

## Machinery Exhibits at Atlantic City

### A Large Representation at the Railroad Association Convention

The joint convention of the Master Car Builders' Association and American Railway Master Mechanics' Association, held at Atlantic City June 15 to June 22, was one of unusual interest to machinery and supply men, as the exhibits of machine tools and shop appliances were larger than ever. They occupied 71,453 sq. ft. of space, and it is probable that at no exposition of international scope has so much mechanical equipment been shown as was seen on the million-dollar pier, where the exhibition took place. There were 228 exhibitors, and in addition to track appliances, cars and other railroad material there was much equipment applicable generally to the metal working industries. The display of machine tools was unusually complete and that section was the center of interest among the railroad shop superintendents who attended the meeting. The following is a partial list of exhibits of general interest:

- American Car & Foundry Company, New York.—Booth reserved for social purposes only.
- American Radiator Company, Chicago.—Steam and hot water boilers, radiators, tank heaters, hot blast heaters, improved car heaters, packless valves, temperature regulators and automatic air valves.
- American Steel Foundries, New York.—Slide frames, cast steel bolsters, side bearings, springs, brake beams, couplers, steel wheels, draft arms, miscellaneous steel castings.
- American Vanadium Company, Pittsburgh, Pa.—Vanadium alloys, vanadium iron and steel products.
- Anchor Packing Company, Philadelphia.—Metal and fibrous packings and mechanical rubber goods.
- Armstrong-Blum Mfg. Company, Chicago, Ill.—Marvel power hack saw machines, portable grinders for lathes and planers, lever punches and shears.
- Armstrong Brothers' Tool Company, Chicago.—Tool holders, ratchet drills and machine shop specialties.
- Charles H. Besly & Co., Chicago.—No. 14 Besly spiral disk grinder, Helmet spiral circles, temper taps, oil and habbitt.
- S. F. Bowser & Co., Inc., Fort Wayne, Ind.—Oil storage system, long distance, self-measuring pumps, power pumps, automatic registering oil meters, oil storage tanks with pumps for handling and measuring all kinds of oils.
- Buckeye Steel Casting Company, Columbus, Ohio.—Couplers, truck and body bolsters, truck frames, journal boxes, pivoted yoke.
- Carborundum Company, Niagara Falls, N. Y.—Carborundum and Aloxit wheels, sharpening stones, rubbing bricks, Carborundum paper and cloth, Garnet paper, Carborundum valve grinding compound.
- Carnegie Steel Company, Pittsburgh, Pa.—Section of standard railroad track laid with 100-lb. rails and Duquesne joints on steel cross ties, with various type fittings; rails, cross ties and Duquesne joints, nickel-plated samples, steel sheet piling, pyramid of spike and bolt kegs bound with steel hoops.
- Carter Iron Company, Pittsburgh, Pa.—Staybolt iron, chain cable iron, engine bolt iron.
- Celfor Tool Company, Chicago.—Celfor high speed drills, reamers, countersinks, three-flipped drills, Rich flat drills, Celfor duplex and precision chunks, reamer sockets.
- Chicago Pneumatic Tool Company, Chicago.—Air compressor and four special drills.
- Chisholm & Moore Mfg. Company, Cleveland, Ohio.—Cyclone high speed chain hoists, from 1½ to 30 tons; working model of 5-ton Cyclone hoist.
- Coe Brass Mfg. Company, Ansonia, Conn.—Extruded metals for car construction and ornamentation, also for use in electrical and other apparatus.
- Commonwealth Steel Company, St. Louis.—Catalogues, printed matter, models.
- Crane Company, Chicago.—Steam traps, valves, malleable and cast iron fittings.
- Crosby Steam Gate & Valve Company, Boston.—Locomotive safety valves, gauges and blow-off valves, testing instruments.
- Dearborn Drug & Chemical Works, Chicago, Ill.—Water treating preparations for the prevention of scale.
- Detroit Hoist & Machine Company, Detroit, Mich.—Pneumatic and electric turntable tractors and geared pneumatic hoists.
- Detroit Lubricator Company, Detroit, Mich.—Locomotive lubricators, automobile and gas engine mechanical valveless force feed oil pumps.
- Henry Disston & Sons, Inc., Philadelphia.—Metal cutting saws and hand saws of all kinds, regular and superfine files, screwdrivers and spirit levels.
- Joseph Dixon Crucible Company, Jersey City, N. J.—Graphite products, including Dixon flake graphite, graphite greases, silica-graphite, crucibles, belt dressings and pencils.
- Duff Mfg. Company, Pittsburgh.—Barrett track jacks, Duff-Bethlehem hydraulic jacks, pump hydraulic jacks.
- Fairbanks, Morse & Co., Chicago.—Gasoline section and inspection motor cars, telescope standpipe and sectionalized valve, chain hoists, tools, rail drills, power pump and motor, geared ratchet, ball and cone bearing screw jacks and hydraulic jacks.
- Flower Waste & Packing Company, New York.—Resilient journal packing.
- Walter H. Foster, New York.—Bolt turning machine, staybolt threading and reducing machine, one Potter & Johnson bolt altering machine, staybolt drilling machine, automatic nut tapping machine, chaser grinder, lathe dog.
- Forsyth Brothers Company, Chicago.—Forsyth centering device, friction draft gear.
- Franklin Mfg. Company, Franklin, Pa.—Magnesia boiler lagging and pipe coverings, corrugated asbestos roofing or sheathing, asbestos shingles and asbestos building lumber, corrugated copper gaskets, composition metallic gaskets.
- Garlock Packing Company, Palmyra, N. Y.—Throttle packing, air pump packing, sheet packing, gaskets, metal packing.
- General Electric Company, Schenectady, N. Y.—Portable air compressor, with pressure regulator, flaming arc lamps.
- Gilbert & Barker Mfg. Company, New York.—Self-measuring pumps, oil storage tanks, oil storage systems, transfer pumps, storage indicators and lubricating oil tanks.
- Goldschmidt Thermit Company, New York.—All materials required for making welds on locomotive frames, driving wheel spokes, connecting rod and other broken wrought iron and steel sections, samples of welds made on steel bars, trolley rails, standard and extra heavy pipes, &c.; metals free from carbon produced by the Thermit process.
- Greene, Tweed & Co., New York.—Palmetto packing, reversible ratchet wrenches.
- Grip Nut Company, Atlantic City, N. J.—Grip nuts.
- H. G. Hammett, Troy, N. Y.—Trojan metallic packing, radius grinder, triple valve bushing roller.
- Edwin Harrington, Son & Co., Inc., Philadelphia.—Peerless hoists, screw hoists, differential hoists, plain and geared travelers to run on lower flange of I-beam.
- Home Rubber Company, Trenton, N. J.—Black sheet packing, hydraulic packing, flax packing, gum core packing, ring and combination packings.
- Hunt-Spiller Mfg. Corporation, South Boston, Mass.—Hunt-Spiller gun iron castings, such as piston valve rings, piston valve bushing, cylinder packing rings, eccentrics and eccentric straps, crosshead shoes.
- Independent Pneumatic Tool Company, Chicago.—Thor piston air drills, pneumatic riveting, chipping, caulking and flue beading hammers, the Thor staybolt driver.
- Jenkins Brothers, New York.—Brass globe valves, brass gates, brass Y valves, radiator valves and air valves, 96 packing, pump valves and Jenkins disks.
- Kerite Insulated Wire & Cable Company, New York.—Insulated wires and cables, Kerite tape.
- Keystone Drop Forge Works, Chester, Pa.—Keystone connecting links, safety shackle hooks, wrenches, hoist hooks, shafting collars, thumb screws, thumb nuts, eye bolts, machine handles, special drop forgings.
- Lackawanna Steel Company, New York.—Rails, rail joints, tie plates, beams, channels, angles, steel plate, steel forging, corrugated and deformed bars, twisted squares, the Abbott base plate, sheet piling.
- Landis Machine Company, Waynesboro, Pa.—Double head motor driven bolt threading machine, single head open belt type high speed bolt threading machine, automatic die head for turret lathe, semi-automatic die head for pipe threading machines and demonstrations of thread cutting and samples of threaded products.
- Landis Tool Company, Waynesboro, Pa.—Cylindrical grinders, one gap grinder, one No. 2 universal grinder.
- Linde Air Products Company, Buffalo.—Oxy-acetylene welding and oxy-coal gas cutting apparatus and wrecking equipment.
- David Lupton Sons Company, Philadelphia.—Metal sash.
- Lunkenheimer Company, Cincinnati.—Engineering specialties, including brass and iron gate, globe, blow-off and swing check valves.
- Walter MacLeod & Co., Cincinnati.—Lights for wrecking outfits and construction work, portable oil burners, sand blast machines, oil furnaces, tire heaters, water softening apparatus.
- Main Belting Company.—Leviathan belting.
- Manning, Maxwell & Moore, Inc., New York, and its subsidiary companies, the Hancock Inspirator Company, Ashcroft Mfg. Company, Consolidated Safety Valve Company, Hayden & Derby Mfg. Company and Shaw Electric Crane Company.—Inspirators, valves, gauges and indicators, one F. E. Reed Company engine lathe, one Foote-Burt shaper, one Foote-Burt drill, one Cincinnati shaper, two Gridley turret lathes, one each Hendey milling machine, geared head engine lathe and motor driven shaper, one Dresser motor driven radial drill, one National heading and forging machine, one National motor driven bolt cutter, one National die sharpener, one Elmore sensitive drill.
- Midvale Steel Company.—Forgings.
- National-Acme Mfg. Company, Cleveland, Ohio.—Automatic screw machine—Acme multiple spindle, set up on two shoulder bolt job.
- National Malleable Castings Company, Cleveland, Ohio.—Sharon, Tower, Climax and Latrobe couplers.
- Nelson Valve Company, Philadelphia.—Valves in bronze, iron



- and steel, a complete unit of testing apparatus in actual operation, superheated steam steel gate valve.
- Niles-Bement-Pond Company, New York, and Pratt & Whitney Company.—A 20-in. Le Blond engine lathe with all geared head; new type cone head for same, Le Blond universal milling machine; pneumatic tool clamp for steel tire lathe, Pratt & Whitney small tools, gauges.
- North Brothers Mfg. Company, Philadelphia.—"Yankee" tools, ratchet screwdrivers, spiral screwdrivers, automatic push drills, hand drills.
- Norton Company, Worcester, Mass.—Showcase containing an assortment of alundum grinding wheels and India oil stones, alundum in grains.
- A. O. Norton, Inc., Boston, Mass.—High speed ball bearing lifting jacks.
- Parkesburg Iron Company, Parkesburg, Pa.—Photographs of mills showing process of manufacture, also samples of charcoal iron boiler tubes.
- Rockwell Furnace Company, New York.—Furnaces for railroad shops.
- Royersford Foundry & Machine Company, Inc., Royersford, Pa.—Punch and shearing machines and Sells roller bearings.
- Schoen-Jackson Company, Media, Pa.—Flexible tubing.
- Scullin-Gallagher Iron & Steel Company, St. Louis, Mo.—Cast steel bolsters and truck side frames.
- William Sellers & Co., Inc., Philadelphia.—Locomotive injectors and accessories, ball and socket hanger, hanger boxes and couplings, set of three drivers for extra high power 42-in. car wheel lathe mounted upon a temporary wooden face plate, a turret rest of this lathe and a pair of wheels turned by the lathe.
- Spencer Turbine Cleaner Company, Hartford, Conn.—5-hp. vertical direct driven turbine cleaner; new pressed steel vacuum cleaning tools.
- Sprague Electric Company, New York.—Flexible steel armored steam, pneumatic, hydraulic and water hose and fittings for shop use.
- Stoeber Foundry & Mfg. Company, Myerstown, Pa.—One No. 2 automatic pipe bending machine, motor driven, capacity 1 in. to 2 in., one No. 2 pipe threading and cutting off machine, motor driven, capacity 1/4 in. to 2 in.
- Strong, Carlisle & Hammond Company, Cleveland.—Randall graphite sheet lubricator, steam specialties, including steam and vacuum traps, pressure reducing valves, steam separators and the Handy wrench.
- Tindel-Morris Company, Eddystone, Pa.—Cold saw machine, standard and structural type, inserted tooth cold saws, saw grinder.
- Titan Steel Casting Company (formerly Benjamin Atha & Co., Newark, N. J.)—Body and truck bolsters, tank car saddle, manganese steel gears and pinions.
- Toledo Pipe Threading Machine Company, Toledo, Ohio.—Hand operated threading tools, threading 12-in., 8-in. and 4-in. standard steel pipe, several smaller threading tools, vices, vise mounts and pipe cutters.
- H. B. Underwood & Co., Philadelphia, Pa.—Portable cylinder boring bar, portable crank pin returning machine, new portable crank pin rivet head facer, portable rotary boiler tube cleaner, locomotive pedestal facing machine.
- Union Draft Gear Company, Chicago.—Cardwell friction draft gear, Cardwell and Cardwell rocker side bearings.
- Union Mfg. Company, New Britain, Conn.—Lathe, planer, drill, boring mill, car wheel, and valve chucks.
- United States Metallic Packing Company, Philadelphia.—United States multiangular metallic packing and King type metallic packing for locomotive piston rods and valve stems.
- Watson-Stillman Company, New York.—Shop jacks, wrecking jack, journal box jack, outside and inside pump and independent pump type jacks, telescopic motor lift jack, portable hydraulic beam punch, hydraulic T rail bender, 125-ton crank pin press, 200-ton motor driven hydro-pneumatic wheel press, 30-ton portable axle bearing press, portable shaft straightener, four twin volute turbine pumps in operation, working model Chambers locomotive throttle valve.
- Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.—Motors, controllers, transformers, switchboards and arc lamps.
- Westinghouse Machine Company, Pittsburgh.—Le Blanc condenser and Le Blanc vacuum pump, turbine driven.

**Purchase of the Loucks Rolling Mill at Roanoke, Va.**—Joseph S. Hagan, attorney, and O. S. Jeffries, engineer, representing Philadelphia capitalists, have purchased the rolling mills of the Loucks Iron & Steel Company at Roanoke, Va. It is the intention of the new company to have the plant in operation by July 10. The principal product will be rerolled steel rails, manufactured under a patent process. The original plant was built by the Roanoke Iron Company in 1891-1892 under the direction of B. H. Lentz, and the ownership passed through different hands until May, 1906, when the Loucks Iron & Steel Company purchased it. The plant was thoroughly overhauled by this company and was operated by it about two years. A description was given in *The Iron Age* of September 12, 1907, page 696. The machinery is in good condition and the new owners anticipate no trouble in starting up. Orders

enough have been booked ahead to keep the mill running over nine months.

## An Ohio Foundry Nearly a Century Old

After being in existence for 94 years, the Means Foundry & Machine Company, at Steubenville, Ohio, maker of machinery for the manufacture of sewer pipe, also brass and bronze castings, has abandoned its plant at that place and has reorganized as the Means Engineering & Foundry Company, Inc., of Toronto, Jefferson County, Ohio. It has built and has now in operation at Toronto a new foundry, 58 x 120 ft.; machine shop, 58 x 135 ft.; pattern storage building, 40 x 165 ft., and office building, 20 x 55 ft. These buildings are all of steel and brick construction, with slate roofs and are practically fireproof. The foundry and machine shop are served with 10-ton electric traveling cranes, and the buildings are so arranged that a siding from the Cleveland & Pittsburgh Division of the Pennsylvania Railroad runs into both buildings, and cars can be loaded or unloaded with electric cranes. Power is furnished by two gas engines—a St. Mary's engine of 50 hp. for the machine shop, while the foundry has a 35-hp. New Brighton engine. Ten new machine tools have been added to the machines used by the old company at Steubenville, and which were removed to Toronto. The plant will give employment to from 75 to 100 men when in full operation. The company's special line is machinery for manufacturing sewer pipe, brick fireproofing, conduits and other similar products.

The new company is capitalized at \$75,000. The officers are as follows: Thomas Price, president; W. B. Goucher, vice-president; J. R. Gilcrest, treasurer, and George P. Wilson, secretary. The Means foundry at Steubenville, which has been abandoned, was probably the first erected west of the Allegheny Mountains, having been built by Arthur M. Phillip and Robert Carroll in 1816. It is stated that William McKinley, Sr., father of the late President, worked as a molder in this foundry about 90 years ago. The plant furnished a large amount of work for the old Steubenville & Indiana Railroad and later for the Pennsylvania lines. It was in this foundry that the first iron water pipes laid in Steubenville many years ago were manufactured. Many of the old employees will go to Toronto to work in the new foundry and machine shops.

**Gasoline Engines for Farm Traction.**—The new farm tractor plant of the International Harvester Company at Chicago will be operated on a large scale. The factory, on which structural steel work is now under way, occupies a tract of about 25 acres west of the McCormick Works, fronting on Marshall boulevard and the tracks of the Pan Handle Railroad. It will be devoted to the manufacture of the larger sizes of farm traction engines running from 20 to 40 hp. Smaller engines of this type have been manufactured by the International Company for several years at its Milwaukee plant and this business will be continued at Milwaukee. Such gasoline engines are coming into extensive use throughout the West for plowing, threshing, corn husking, corn shelling and other operations requiring power, and they are also being used extensively for hauling crops to the railroads. The gasoline engine is rapidly replacing the steam engine for threshing, and is successful in plowing and other work for which steam engines have never been used to any extent.

The monthly meeting of the Engineers' Society of Western Pennsylvania was held in its new quarters in the Oliver Building, Pittsburgh, on Tuesday evening, June 21. The paper of the evening, on "Low Pressure Steam Turbines," was presented by F. E. McKee.

## The New Earlston Furnace

### Features of Top Construction and of Bottom Filling

The new Earlston furnace of Joseph E. Thropp, which was recently blown in, replaces the stack frequently called the Everett furnace, and is located at Everett, Pa. The problem in the work of reconstruction included the erection of a modern stack of 250 tons daily capacity, adapted for the smelting of a large percentage of local ore somewhat lower in iron than

in the chute leading to the skip car, and a dust elevator keeps the bars of the screen free underneath, thus furnishing all the conditions for a thorough cleaning of the coke.

#### Baker-Neumann Distributer

The stock distributing arrangement, with the structural work at the top, is shown on a large scale in Fig. 2. The distribution of each skip load is accomplished by a distributing plate attached to the gas seal. The gas seal bell is closed by a steam cylinder as the skip car leaves the top, and, while the piston on this cylinder is moving upward, supported on a cushion of steam, a spirally threaded tail rod attached to the piston gives the required rotation of the bell. In opening the gas seal the bell makes no rotative movement, and it is always down when the loaded skip reaches the top. The rotation of the distributor is usually fixed at  $87\frac{1}{2}$  degrees for each skip load, thus giving a slow spiral movement to the unloading point of each skip into the main hopper.

With this device the top of the receiving hopper is 5 ft. above the top of the furnace; therefore the drop of the coke and the breakage resulting therefrom is reduced to a minimum. In addition to reduced breakage in coke handling, this distributor gives very satisfactory results where the problem of distribution is complicated by a large percentage of lump ore in the mixture. Repairs to this top are very light; in fact, several of the turning cylinders have been in use for two years with no repairs being made to them.

The top is also designed with the special

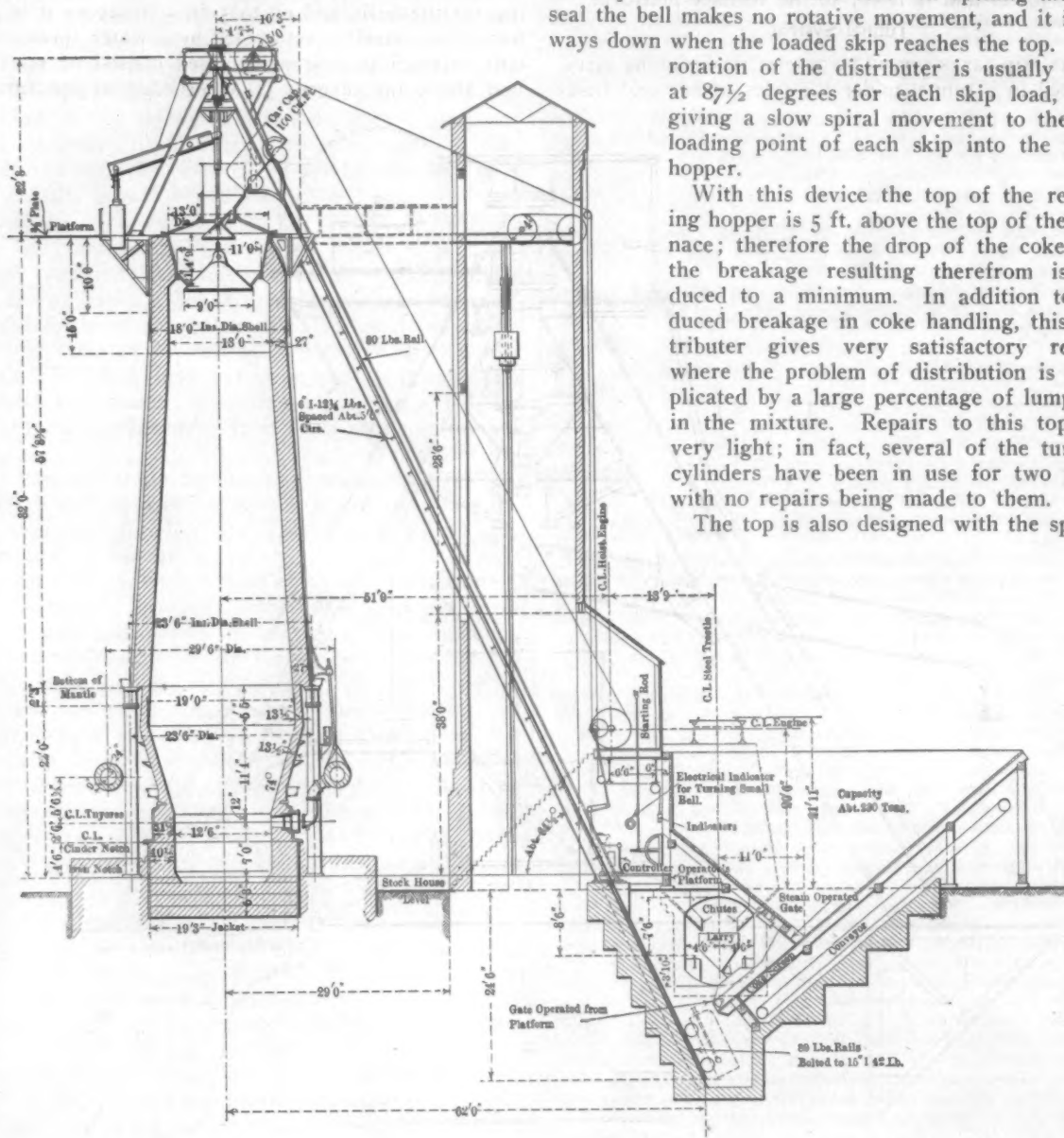


Fig. 1.—Section Through New Earlston Furnace, Showing Arrangement of Hoist House, Tunnel for Ore Larry and Coke Screening Device.

the usual Lake mixture, and having a larger percentage of lumps, while the coke was somewhat softer and more friable than the usual Connellsville product. The stock handling was to be done mechanically in connection with an ore storage system for 50 per cent of the ore burden during the winter months.

The result of this study is shown in Fig. 1, a section of the furnace and stockhouse on the center line through the skip incline and furnace taphole. On account of the structure of the coke the furnace height was fixed at 82 ft. as being the limit for that fuel. To free this coke entirely of dust it is unloaded into a large bin at the foot of the skip incline, the intention being to keep this bin nearly full at all times. From the bin the coke passes over a grizzly 8 ft. long, placed

purpose of reducing the time and cost of making renewals. The double bell rods are provided with holes every 2 ft. and the steam cylinder for closing the main bell is designed to lift the gas seal, the lip ring and the old bell, when one after another of these castings must be raised to introduce a new bell.

The lip ring is securely held in place by six 3 x 3 in. square, holding down bars extending up through the gas seal and securely keyed into bosses extending up from this steel casting. In order to make the charging thoroughly automatic all the movements of the distributor and the lowering of the main bell are operated mechanically by a controlling device located in the operator's room under the hoist engine. The operator, therefore, has only to start the skip hoist and



the Otis Improved slow down and stop insures an easy and accurate stop of the skip at each end of the incline without hand control. The skip is filled with coke from the main coke bin, the gates being operated by a steam cylinder and controlled by a four-way valve placed conveniently for the operator.

Indicators are provided, which show the movement of the main bell and the distributor. The level of the stock in the furnace at two points diametrically opposite can be ascertained by two stock indicators showing on a dial the stock level when operated to lower the gauge rod into the furnace.

In the construction of the skip incline the old brick hoist was allowed to remain and utilized as a counterweight tower and stairway to the furnace platform.

#### Tunnel System

The skip car is served by an electric weighing larry, operated in a tunnel under the piles of ore and lime-

keep an understudy on the larry car, who can assist the larry man and be in training when the larry man or operator is off duty. These men also keep the tunnel and skip pit clean. This latter task, which is such a laborious one at most skip filled furnaces, is readily accomplished each time the furnace is full by a very simple contrivance. A door is placed near the bottom of the skip car into which the spillage into the skip pit is shoveled. This door has a very simple and effective latch which prevents opening during hoisting, and its location is such that it is not injured by the regular charging of the skip car.

#### The Furnace

The Earlston stack is provided with a 13½-in. lining for the bosh, and up to 5 ft. 5 in. above it is protected by a steel jacket cooled by a water spray. The only internal cooling plates used consist of one row just above the tuyeres. The crucible of the furnace

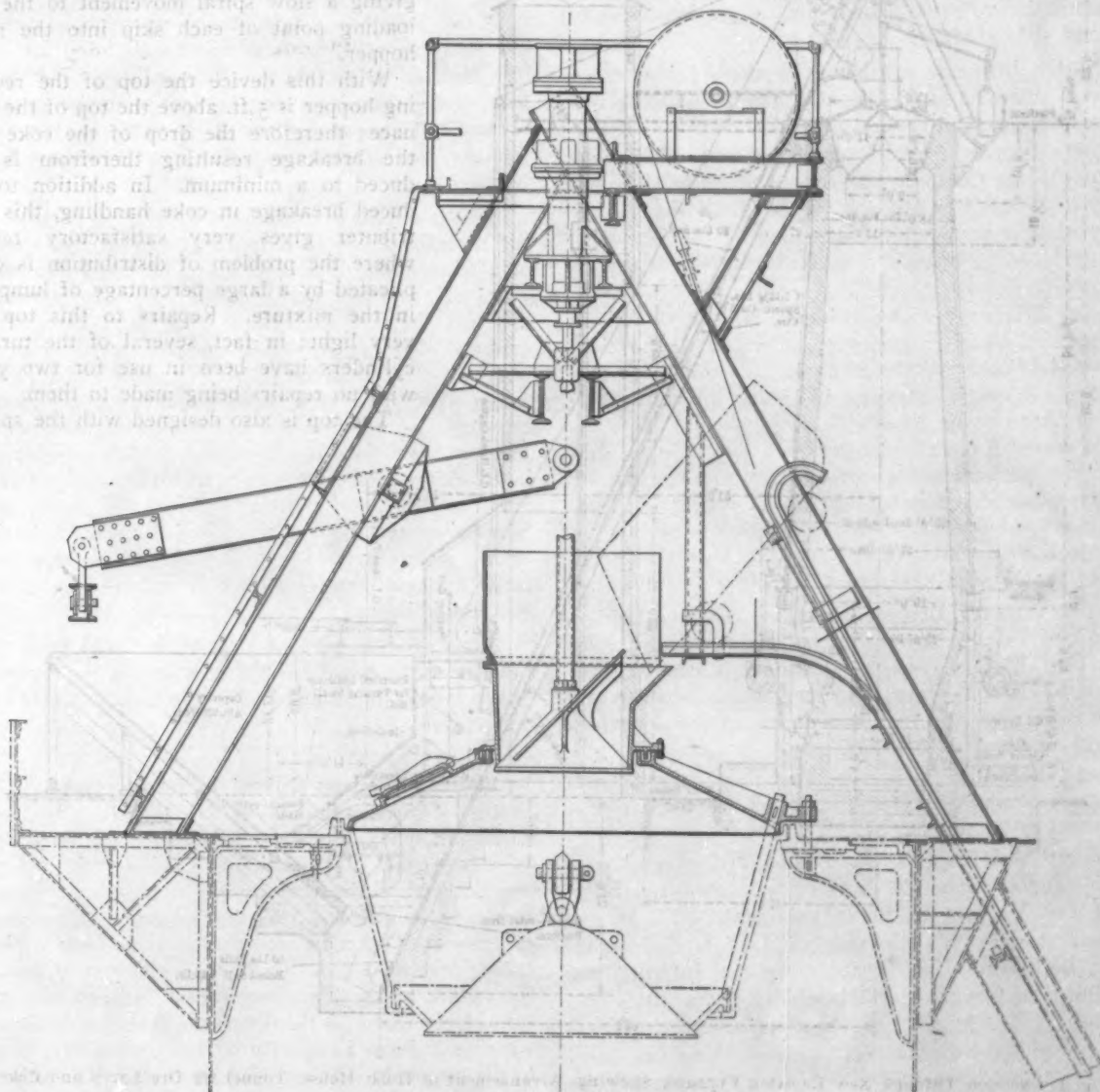


Fig. 2.—Enlarged View of Top Filling Apparatus.

stone. This tunnel is built of concrete, and extends for 340 ft. under the center of a high trestle constructed of concrete piers placed at 30-ft. centers and spanned by 36-in. steel girders supporting the rails. The weight of the ore and the limestone thus rests on the ground, the concrete trestle piers acting as partitions between the piles. In filling, the stock for the furnace is drawn through chutes in the roof of the tunnel into the weighing larry. Two larrys are furnished, but only one is used, the other being held as a spare. The labor required to operate this plant each turn consists of one operator at the foot of the incline and two on the larry car. Two men on each turn can do the work of filling, but it is thought advisable to

is inclosed in a cast steel tuyere and hearth jacket externally cooled. The inwall is 27 in. thick, with 2½-in. packing next to the shell, which is designed for cooling by water sprays, the drippings falling into a collecting trough at the mantel.

#### The Equalizer

Uniform temperature of blast during each blow of the stoves is secured by the use of a regenerative chamber placed in the hot blast main. This regenerator or equalizer consists of a cylinder 12 ft. 6 in. in diameter and 20 ft. high, filled with firebrick checker work. This chamber gives almost uniform temperature of the blast during an hour's blow on any stove.

The excess of temperature when the stove goes into service is absorbed by the regenerator and is given up by the latter at the end of the blow when the stove itself is losing temperature rapidly.

The improvements described were made from designs furnished by Ladd & Baker, Inc., 1011 Chestnut street, Philadelphia.

## Personal

J. A. Herrick has recently removed his engineering offices to Suite 1500, No. 2 Rector street, New York.

J. E. Schall, for the past 11 years general manager of the New Haven Iron & Steel Company, New Haven, Conn., will sever his connection with this concern July 1. Under the name of J. E. Schall & Co. he will open an office in New Haven as the New England representative of several mills making various lines of iron and steel products.

Charles Burgess, president of the Cyclops Steel Works, Titusville, Pa., recently sailed for England, where he will spend several months.

F. D. Dorman, formerly secretary of the Maxwell-Briscoe Motor Company, and more recently secretary of the United States Motor Company, has been elected vice-president and general manager of the Maxwell-Briscoe Motor Company, with headquarters at Tarrytown, N. Y.

Allen Ransom, vice-president of the Marshall-Huschart Machinery Company, Chicago, has retired from active business, resigning his position with that company, although retaining his stock interest. This step has been taken by advice of physicians, as a result of recent illness, which makes a long rest imperative. Mr. Ransom will go to California in the winter, and has planned a trip to Japan next spring. He has been identified with the Chicago machinery market for the past 22 years, and for 10 years has been vice-president of the Marshall-Huschart Machinery Company.

W. R. Webster, Bridgeport Brass Company, Bridgeport, Conn.; C. P. Karr, Nathan Mfg. Company, New York, and F. O. Clements, National Cash Register Company, Dayton, Ohio, have been appointed a committee on papers for the 1911 convention of the American Brass Founders' Association.

John H. Patterson, president of the National Cash Register Company, Dayton, Ohio, has returned from a two years' stay in Europe.

Robert McMillan has been appointed general purchasing agent of the Pittsburgh Steel Company, Pittsburgh, Pa., Wallace H. Rowe, president.

Prof. Joseph W. Richards of Lehigh University, South Bethlehem, Pa., is attending the International Metallurgical Congress at Düsseldorf, Germany.

Thomas H. Mirkil, Jr., has resigned as general manager of the Southwark Foundry & Machine Company's plant, Philadelphia, and after July 1 will be connected in a similar capacity with the Poole Engineering & Machine Company, Baltimore, Md.

Joseph G. Butler, Jr., Youngstown, Ohio, chairman of the Bessemer Pig Iron Association, sails from New York June 28 for a European tour.

William B. Dickson, first vice-president of the United States Steel Corporation, sailed for Europe Wednesday and will return early in July.

The Canadian Manufacturers' Association will visit Port Arthur, Ont., September 12. The secretary, G. M. Murray, has arranged for trips of inspection to various industries, including the blast furnace and coke plant of the Atikokan Iron Company, the Canadian Northern elevator and the dry docks and lumber mills.

## Obituary

D. WHEELER SWIFT, Worcester, Mass., widely known as an inventor of machinery used in the manufacture of envelopes, died June 14, aged 70 years. Born in West Falmouth, Mass., he began an active business life when a young man, engaging in the manufacture of wringers with his two brothers. In 1862 he invented what is said to have been the first spring wringer. Two years later he went to Worcester, entering the envelope business with the Whitcomb Envelope Company. During the 20 years he was with the company he, with his brother Henry, perfected machinery for folding and gumming envelopes. In 1884 he became one of the partners in the firm of Logan, Swift & Brigham, and assisted in building up a great business, now one of the important works of the United States Envelope Company. He leaves a widow.

KARL RÖCHLING, one of the pioneers of the iron industry of southwestern Germany, died at Saarbrücken late in May at an advanced age. He was the first of German iron men to recognize the great importance of the ore deposits at Briey, across the French frontier, and to secure valuable properties there for his works.

DANIEL EAGAN, one of the early vice-presidents of the American Steel Foundries, died at his residence in Philadelphia, Pa., Thursday, June 9. He was 65 years old, and had been in poor health for some time. He was born in Ireland in 1845, and came to this country when an infant, his parents settling in Canada. In 1864 he went to Sharon, Pa., and in 1869 to Sharpsville, Pa., and there engaged in the foundry business. In 1887 he was one of the organizers of the Sharon Steel Casting Company, which company was later merged in the American Steel Foundries and of the latter he was an officer for many years. Some time ago Mr. Eagan retired from active business, taking up his residence in Philadelphia, where he had large financial interests. He is survived by a widow and five children.

A. H. KAHN died at Evansville, Ind., June 16, at the age of 74. He was the founder of the Evansville Stove Works, and until a year ago was president of the company.

**Chinese Pig Iron Output to Be Increased.**—United States Vice-Consul Hubert G. Baugh, at Hankow, China, reported recently on the contract made by the Western Steel Corporation, Seattle, Wash., for the purchase of 36,000 tons of pig iron a year from the Hanyang Iron & Steel Works, Hankow. The contract extends over 15 years and the buyer has the option of taking 100,000 tons a year. The vice-consul says that the output of the Hanyang Works in 1909 was 74,000 tons of pig iron. A third furnace is under construction which will have a capacity of 250 tons a day, or equal to the output of both existing furnaces. The shipments of pig iron in 1909 were 44,300 tons, of which 16,800 tons went to Shanghai and other Chinese ports, 23,700 tons to Japan and 3800 tons to the United States. The shipments to the Pacific Coast of the United States are thus shown to be less than has been commonly supposed. It may not be generally known that there is still in storage on New York harbor several hundred tons of the 2500 tons of basic pig iron from the Hanyang Works brought to the Atlantic Coast in the summer of 1907.

The United States Senate committee to investigate the cost of living has finished taking testimony and it is expected its report will be completed within a few days and presented before the adjournment of Congress.



# The Extrusion of Metals in the Solid State

## Its Limitations and Most Useful Applications

Excluding the shaping of metals by the processes of cutting, abrading and mere bending, no one of which materially affects the molecular condition of the metal, metals may be shaped or worked in any one of five ways, each of which imparts a different quality. These five ways are: casting, rolling, forging, drawing and extruding. By extruding is meant forcing or pushing the metal while in a solid or nonliquid state through a die by pressure applied back of the mass to be extruded. The mere pressing of liquid or molten metal through an opening may be considered substantially casting.

Each of these several methods has its own peculiar advantages, and each confers upon the material treated

extruded metal into a crystalline structure similar to that of cast metal.

Although many experiments have been made with shaping iron and steel by extrusion, and a number of patents taken out for different ways and means of practicing it, it is obvious that if the product is not essentially stronger or otherwise superior to cast metal, the desired form might be produced by casting much more cheaply and expeditiously. Extrusion of iron and steel, therefore, has been little practiced commercially.

Small articles, such as light rivets, chaplets and the like, have been successfully made thus from steel, and when such an article is needed with a head so large that it cannot successfully be upset therein, it is a valuable method. Starting, for example, with a disk of metal of the diameter of the head desired as at *e* in Fig. 1, confining it in a die, *a b*, having a central opening the size of the desired shank, and then powerfully compressing it as by a plunger, *c*, exactly fitting the die, the metal of the disk will flow toward the central opening *b* and into it. The length of the shank and thickness of the head will be regulated by the amount of movement of the plunger.

### Softer Metals Most Suitable

The effect of working the softer metals by extrusion does not appear to be the same as with iron and steel. In fact, some metals are improved in quality by this treatment, and are capable of being worked into

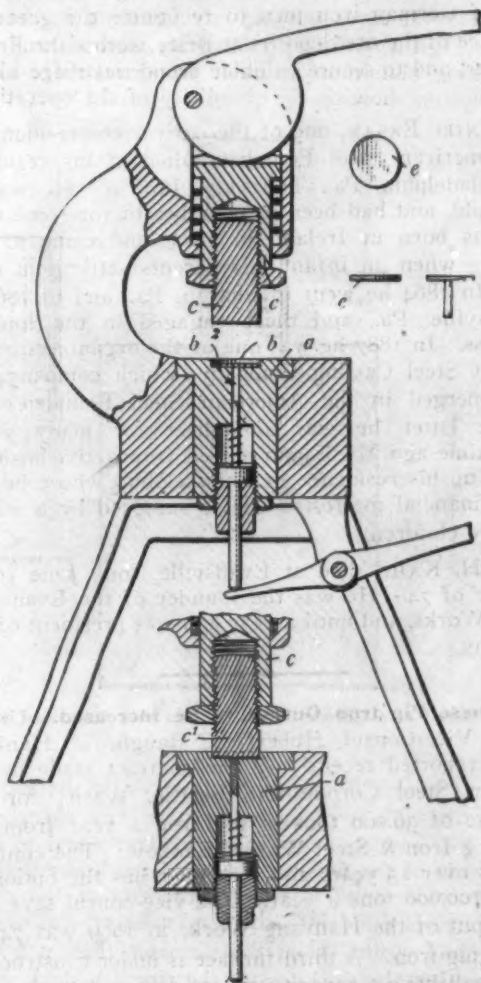


Fig. 1.—A Press for Forming Light Rivets.

certain desirable properties which may be taken advantage of according to the use to which it is to be subjected. Considering the qualities of strength and toughness, it has been found by tests of steel and iron worked in various ways that cast iron and steel are less strong than iron or steel that has been rolled, that rolled iron and steel are not so strong as forged iron or steel, while each of those metals when cold drawn possesses the highest degree of strength and toughness attainable by any known method of mechanical working. Extrusion, on the other hand, throws these metals back into substantially the ingot condition. The great amount of power required to cause a tube, bar or plate to be extruded through a die from a solid block of steel, even in a highly heated condition, seems to disintegrate its texture and rearrange the molecules of the

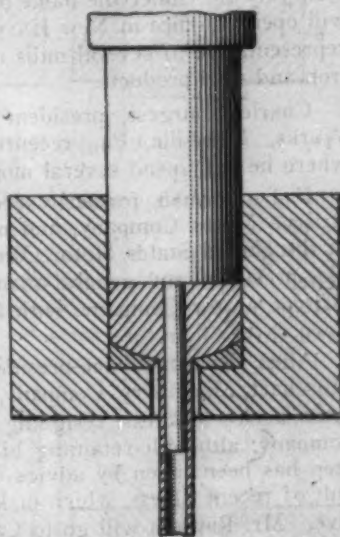


Fig. 2.—Detail of a German Press for Making Seamless Tubes of Pure Zinc.

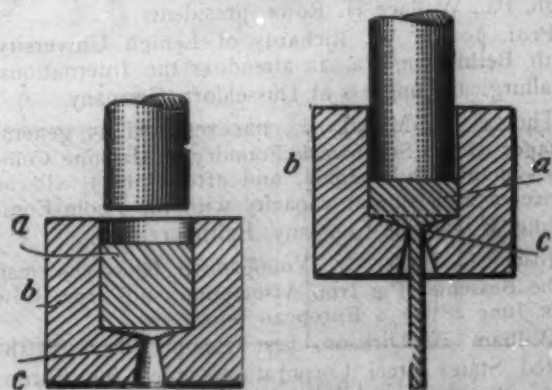


Fig. 3.—Detail of a Press for Changing the Crystalline Structure of Zinc.

shapes impossible to be attained by other methods, notably is this the case with pure zinc. For example, some five or six years ago, Salomon Frank produced in Germany perfect seamless tubes of pure zinc 40 ft. long, by merely extruding a block of cold zinc through a die in a screw press, the dies being substantially such

S. DIESCHER & SONS,  
Mechanical and Civil Engineers,  
PITTSBURGH, PA.

as are illustrated in Fig. 2. The press was placed in an upper story of a building, and the metal allowed to extrude downward through holes in the floors. Zinc seamless tubes had never been produced before. The metal would not work under the usual processes; it could not be successfully drawn, or machined even, without alloying it with copper, tin or some other relatively expensive metal. There was nothing substan-

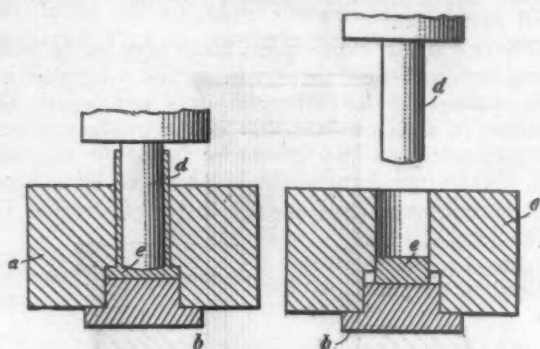


Fig. 4.—Detail of a Press for Extruding Cartridge Shells.

tially new in the apparatus used. In the early part of the nineteenth century lead pipe had been made in a press like that used by Frank, the lead having been first melted and poured into the container around the mandrel on the plunger, then allowed to cool and forced out through the die in tube form.

Frank's study and experiment showed that good re-

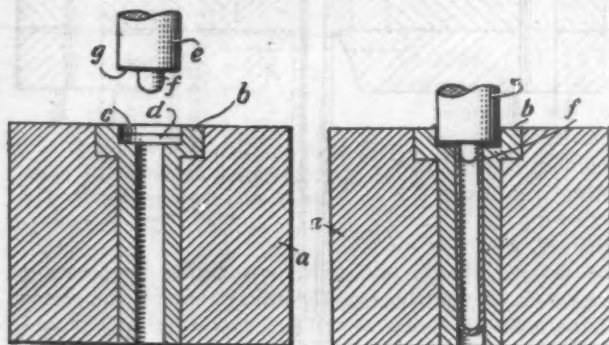


Fig. 5.—Detail of Another Type of Cartridge Shell Press.

sults were obtained only under certain conditions. He then evolved a theory of the process, stated the essential conditions, and obtained a patent for a process of treating zinc by which there could be imparted to it "the properties of brass, such as high strength, great malleability and flexibility and particularly those prop-

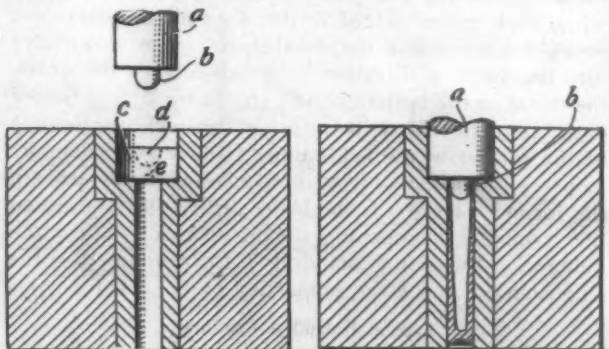


Fig. 6.—Detail of a Press for Extruding a Taper-Walled Cartridge Shell.

erties which permit the metal to be readily worked on machine tools by means of cutting tools." This process is accomplished as indicated in Fig. 3. A block, *a*, of zinc is first heated to a temperature of from 30 to 80 degrees Centigrade in a bath of water. It is then placed in a die, *b*. A pressure of about 90,000 lb. per square inch is then applied, and the zinc extruded

slowly through the die opening *c*. The speed must be low to prevent overheating. The coarse crystalline structure of ordinary zinc is thereby transformed into a very fine crystalline structure. The tensile strength is alleged to increase to the astonishing figure of 23,000 lb. per square inch, while ordinary zinc has a tensile strength of only 120 lb. per square inch; and, whereas, ordinary zinc possesses practically no property of extension, zinc thus treated has an extension of from 26 to 70 per cent.

#### Extruding of Aluminum

Aluminum may be extruded with excellent results. This has led to considering the suitability of aluminum for cartridge cases or shells for small arms ammunition. If shells of aluminum can be made of sufficient strength, the decrease in weight over that of the brass shell would be very important. Furthermore, while the usual process of making such shells of brass by drawing requires about 24 operations, an aluminum shell may be extruded and finished in three or four operations. Aluminum will not stand drawing. The extruded aluminum shell has been discharged and reloaded several times without any jamming in the gun barrel. Figs. 4, 5, 6 and 7 illustrate methods and dies for making aluminum or other metal cartridge shells by extrusion, showing the simplicity of the operations.

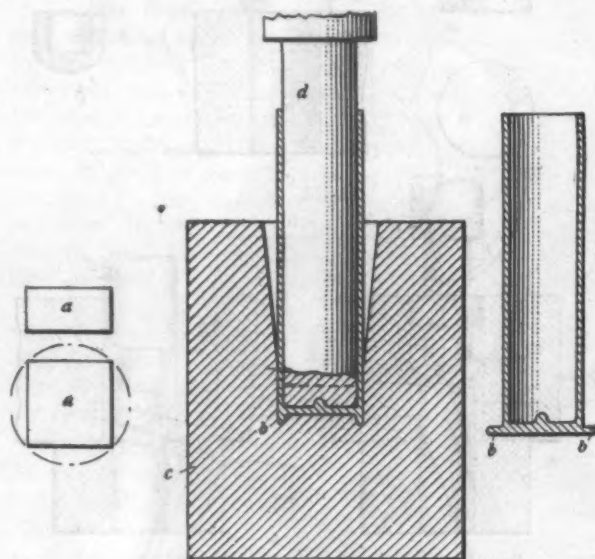


Fig. 7.—Detail of a German Press for Forming Cartridge Shells by Extrusion.

Fig. 4 shows a block or container, *a*, having an opening through it of two diameters, the upper portion of the opening being of a diameter equal to that of the body of the finished shell and the lower portion of a diameter equal to that of the rim of the shell. A block, *b*, is fitted into the larger lower end of the opening and spaced from the shoulder therein a distance equal to the thickness of the rim. A block, *e*, of aluminum or other suitable metal is then fitted exactly into the opening of the container and seated upon the block, *b*. A plunger, *d*, of required size is then centered in the opening and pressed against the block of metal with sufficient force to cause it to flow and extrude in tubular form between the plunger and the surrounding wall of the container. After this one operation, all that is necessary is to square the end of the shell, turn the rim and drill the base for the primer. In this process the base of the shell is seated against the end of the plunger and the amount of descent of the plunger defines the thickness of the base. This method of extrusion causes somewhat more friction than the one next to be mentioned.

In Fig. 5, *a* represents the container, *b* a hard steel lining for it. The upper portion of the opening, *c*, in the container is larger than the lower portion, the latter being of the size desired for the finished shell. A



disk of metal, *d*, is fitted into the larger opening and against the shoulder. A plunger, *e*, having a central cylindrical projection, *f*, of a diameter equal to the desired internal diameter of the shell, is then forced against the upper face of the disk, the projection *f* first penetrating the metal until the shoulder, *g*, of the plunger strikes it, whereupon the metal will be extruded through the smaller opening and around the projection. The thickness of the closed end of the extruded tube will be determined by the distance to which the projection penetrates before the shoulder contacts with the metal disk. Should the projection entirely pierce the disk first, or punch out the center, the resulting extruded tube would be open at both ends. The tube shown in Fig. 5 may be made into a cartridge case or shell by cutting the open end off square, placing the tube in a die and upsetting the closed end to form the rim.

As shown in Fig. 6, a taper walled tube may be extruded by means of a plunger, *a*, having a tapered central projection, *b*. In making a cartridge shell the block of aluminum or other metal, *c*, may first have an

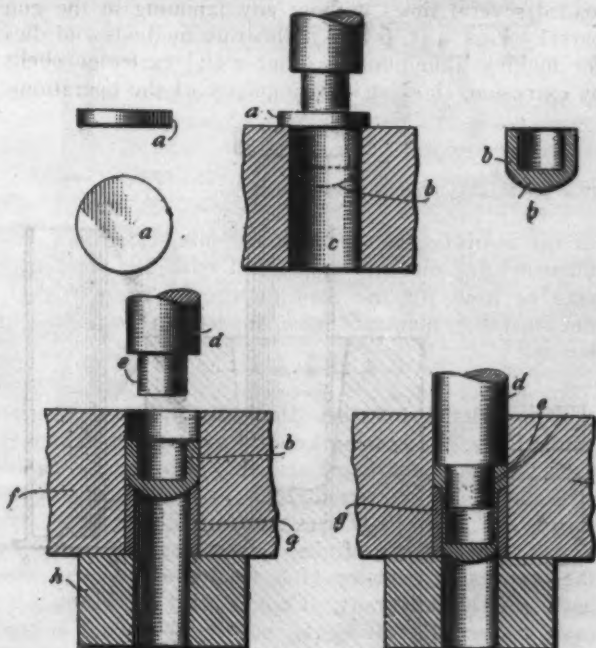


Fig. 8.—Detail of a Press Designed to Extrude Metal Without Weakening Its Grain.

indentation, *d*, punched in one side, of a depth to leave a thickness of metal equal to the desired thickness of the closed end of the shell, and an indentation, *e*, on the other side to allow the rim to be spun thereon after extrusion.

In Fig. 7 is illustrated a German method of making shells by extrusion, whereby a rectangular block, *a*, of suitable metal is placed in a container, *c*, provided

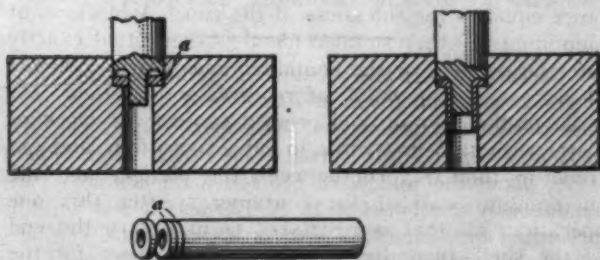


Fig. 9.—Detail of a Process for Forming Eyelets by Extrusion.

with a tapered opening. The diagonal of the block of metal is equal to the diameter of the seat in the container. In this method the lower side of the closed end of the shell is cupped by means of a projection in the seat of the container. A plunger, *d*, is forced against the upper side of the rectangular blank, the metal of which first flows laterally filling the circular

seat and the groove around the central projection, then upward around the plunger. The flanges *b*, formed by the central projection, may be spun into a rim as shown. This method avoids excessive friction, while the form of blank operated on may be preliminarily shaped with economy of power by reason of its freedom to flow laterally as well as upward.

#### A Special Method for Copper

To avoid weakening the grain of the metal, occurring in the ordinary extrusion of such metals as

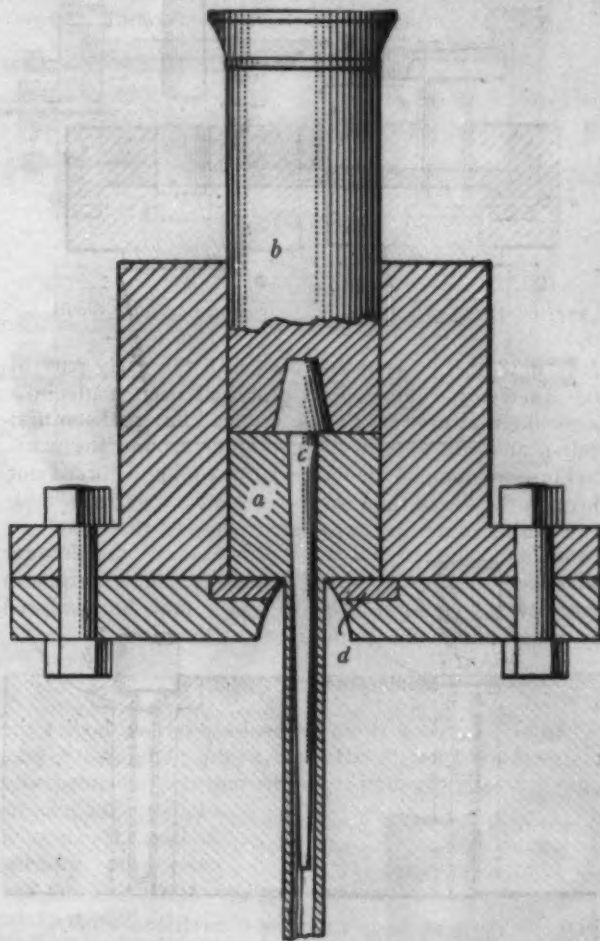


Fig. 10.—An Early Form of Die for Making Tapered Lead Pipe.

copper and its alloys in making cartridge shells, the method illustrated in Fig. 8 has been devised. In this method a cup of the metal is first formed by drawing it from a disk of larger diameter. The grain of the metal in the cup runs longitudinally of the wall, and when such cup is placed in the die and the plunger is brought down into it, the metal starts to flow downward into the die in a direction longitudinally of the grain, the metal in the bottom of the cup being simply forced down into the die without being strained; the impact of the former at the beginning of the stroke is simply to prevent the metal from flowing inward underneath the former. Here *a* is the blank disk, *b* the cup drawn therefrom, *c* the opening of the drawing die, *d* the plunger, *e* the sizing mandrel, *f* the container, *g* the extrusion die and *h* the supporting block therefor.

#### Typical Extruded Products

Many different articles may be extruded from aluminum, copper and other soft metals; for example, eyelets may be made as shown in Fig. 9, by cutting a tube transversely into small rings, *a*, placing these rings successively in a die shaped as shown and extruding them by a plunger having a central mandrel of suitable size and a properly dished and shouldered end.

Although lead pipe has been made in quantity by extrusion through dies similar to those shown in Fig. 2, that method was early superseded to a large extent by forcing heated lead placed in a container through

a die having a central core supported by bridge pieces which divided the metal as it was forced by the plunger, the lead reuniting after it was severed by the bridge pieces as it passed the die, since lead has the property of rewelding under pressure after having been cut, if there has been no opportunity for the fresh surfaces to oxidize. In 1867 the method of making tapered lead pipe by the earlier extrusion process was practiced by attaching a tapered mandrel, *c*, to the plunger, *b*, which gradually decreased the space be-

plunger, *d* the blank being extruded and *e* the oil lining. This method will secure good results if leakage of oil can be prevented.

By the extrusion process plates, bars and tubes of almost any conceivable cross-sectional contour may be formed from the softer metals. It is a method of great value and extensive application in all of the plastic arts. It is applied to the shaping of dough, clay, butter, vulcanized rubber, pyroxyline, nitrocellulose in the manufacture of high explosives, viscose

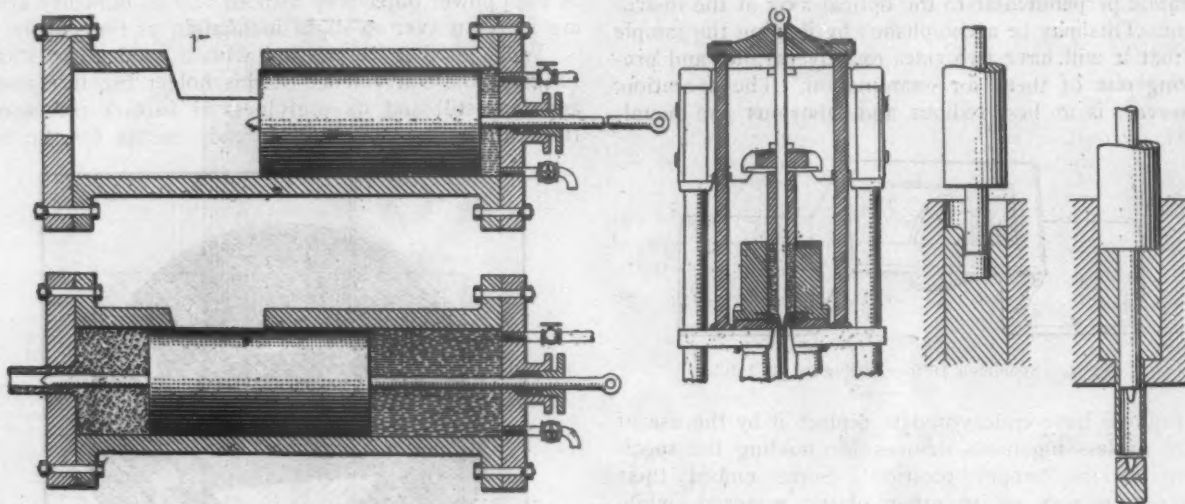


Fig. 11.—Details Showing Three Types of Dies for Making Pipe or Hollow Bodies.

tween the plunger and the die sides *d*, as the plunger advanced, Fig. 10. Clearly, considerable variation in the internal configuration of a pipe may be produced by variations in the contour of the mandrel.

#### Modifications of Apparatus

In an extrusion press for making hollow bodies the mandrel need not be attached to the plunger. It may pass centrally through it and be movable independently of the plunger, as in Fig. 11. In such cases the interior diameter of the extruded tube may be increased or decreased at will if the extremity of the mandrel be tapered, by advancing or retracting the mandrel slightly at will within the die aperture. Such an arrangement also permits of a blank being pierced after it is seated in the container, as the mandrel may be first advanced to punch the blank and then the plunger advanced to extrude it.

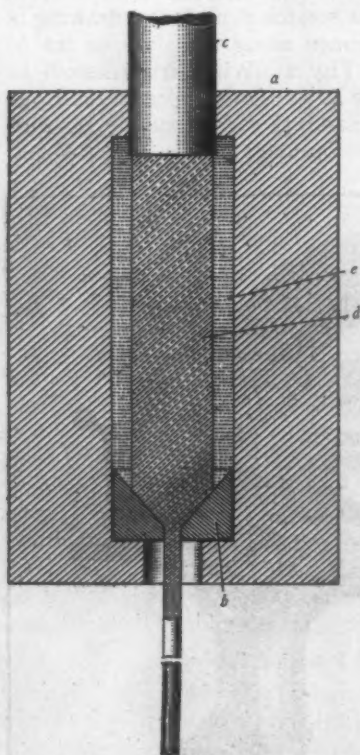


Fig. 12.—Apparatus Designed to Reduce the Friction Occurring During Extrusion.

the blank to be extruded and the walls of the container a layer of incompressible fluid, such as oil. An apparatus for carrying out this method is shown in Fig. 12, wherein *a* is the container, *b* the die, *c* the

in the manufacture of artificial silk, electrodes and filaments for electric lamps, and with Diamond dyes may be used for the manufacture of the extremely fine metallic filaments now in use in incandescent lamps.

**The Fritz Laboratory Dedicated.**—The dedication of the Fritz Engineering Laboratory and the Eckley B. Coxe Mining Laboratory at Lehigh University, South Bethlehem, Pa., occurred June 11. The gift of the former by John Fritz was announced one year ago. The Eckley B. Coxe Mining Laboratory was named by the trustees in memory of a trustee and liberal supporter of the university. Capt. Robert W. Hunt, Chicago, delivered the address, in which he paid a high tribute to John Fritz and told again the story of his early achievements in the development of American rolling mill and steelmaking practice. Remarks were also made by T. C. Martin, New York. The Fritz Laboratory is a building of steel frame construction, 94 x 115 ft., with the main central section 65 ft. high. A 10-ton traveling crane commands this portion of the building, in which large specimens will be tested. The walls are of cement brick lined on the inside with red brick. The Coxe Mining Laboratory is of dressed sandstone, 75 x 100 ft. The main part of the building contains the ore dressing laboratory, 40 x 70 ft.

**Correction.**—In the account of the Mechanical Engineers' convention given in *The Iron Age*, June 9, 1910, one of the discussions on the paper "Operating Experiences with a Blast Furnace Gas Power Plant" (page 1377, about the middle of the left-hand column), was erroneously attributed to E. A. Barnes; it was actually presented by Samuel K. Varnes, experimental engineer of the Pennsylvania Steel Company.

The torpedo boat destroyer Warrington, building for the Government, was launched successfully at the shipyard of the Wm. Cramp Ship & Engine Building Company, Philadelphia, June 18. The Warrington is the fourth of a fleet of five which this yard has already constructed or has in course of construction.



## A Magnetic Holder for the Microscopical Examination of Metals.

BY ALBERT SAUVEUR.\*

In order to examine a piece of metal under the microscope it is necessary, of course, that the polished and otherwise prepared surface be held in a plane accurately perpendicular to the optical axis of the instrument. This may be accomplished by shaping the sample so that it will have two sides exactly parallel and preparing one of them for examination. The operation, however, is at best tedious and laborious and metal-



Fig. 1.—Specimen Holder, Designed in 1892.

lographists have endeavored to replace it by the use of more or less ingenious devices for holding the specimens in the proper position. Some embed their samples in wax or in other plastic material, while others have recourse to stages provided with special leveling devices. These schemes have been fully described and it is unnecessary to recall here their unsatisfactory character. The simple little holder which I designed in 1892 (Fig. 1) gave much greater satisfaction and is, I think, very widely used in this country. The specimen is held firm in place by a rubber band and the holder placed on the stage like an ordinary microscopical slide. If the correction of the objective demands it a cover glass may be inserted between the sample and the holder. It will be apparent that the required manipulations are very simple and quickly performed.

It occurred to me recently that a still simpler and more effective device could be used to hold in place samples of iron and steel and other magnetic substances. The results obtained were highly satisfactory and I am confident that the value of this little holder will be fully appreciated by those who apply the microscope to the examination of iron and steel samples. The device consists of a V-shaped permanent magnet

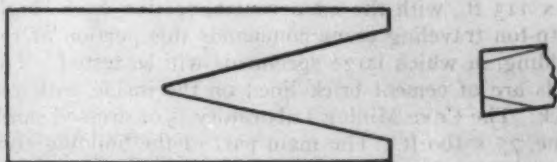


Fig. 2.—Magnetic Specimen Holder.

of special steel about 1 in. wide and  $2\frac{1}{2}$  in. long (Fig. 2). The little magnet is placed on the stage of the microscope like an ordinary glass slide (Figs. 3 and 4) and the sample to be examined suspended to it from below, being held in place by the attraction of both poles. Small samples are suspended near the small end of the V opening, while larger ones are placed nearer the wide opening. This little holder, therefore, is universal in its application within the limits of samples of suitable size for microscopical examination. If the opening of the stage be sufficiently large, say  $1\frac{1}{4}$  in. in diameter or more, the magnet may be kept permanently on the stage, as the samples may then be readily removed or attached to the magnet with the fingers from below the stage. This adds so much to

the convenience of the device that it is strongly urged in case the central aperture of the stage is too small to have it suitably enlarged. The magnet is kept in place like any glass slide by the clips of the microscope, and as with ordinary slides may be moved about for the inspection of the different parts of the preparation. The side of the magnet resting on the stage having been ground perfectly flat, it will be evident that the surface of the sample under examination will always be accurately in the proper position, permitting the use of high-power objectives without fear of difficulty arising from an ever so slight inclination of the sample.

When used in connection with a mechanical stage (Fig. 4) the convenience of this holder becomes more apparent still and its usefulness is further increased. It then affords, moreover, a ready means for the re-

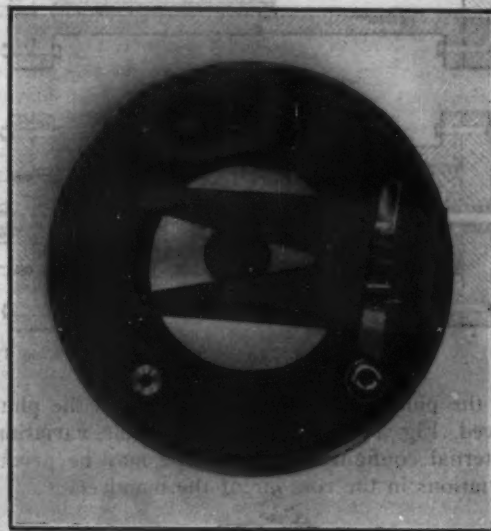


Fig. 3.—Plain Stage Magnetic Holder and Specimen.

peated examination of the same spot of any sample at any time. In such use the holder is laid upon the prepared surface and two scratches made by drawing a needle across the specimen along the sides of the V opening, as shown in Fig. 2. When it is desired to examine the sample the latter is suspended to the magnet so that the needle markings correspond closely with the sides of the magnet opening, in this way securing

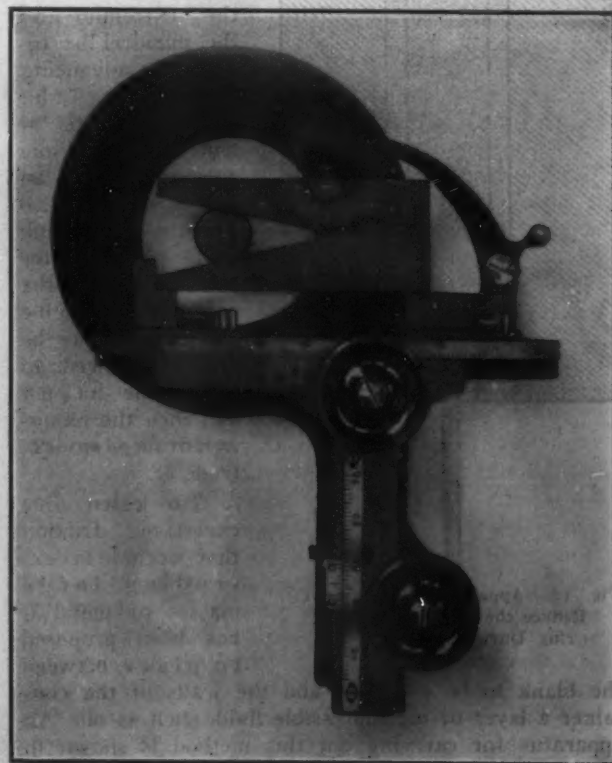


Fig. 4.—Mechanical Stage Magnetic Holder and Specimen.

\* Professor of Metallurgy in Harvard University, Cambridge, Mass.

a permanent position for the sample. The position of the holder itself is controlled, of course, in the usual way, by means of the graduating devices of the mechanical stage.

Finally, by placing the sample below the stage and bringing the prepared surface on a level with the stage, considerably greater working distance is secured, a gain which has its importance.

### J. B. & J. M. Cornell Company Reorganization

Michael Blake and A. Gordon Murray, receivers of the J. B. & J. M. Cornell Company, which has structural steel and foundry plants at Eleventh avenue and Twenty-sixth street, New York City, and Cold Spring, N. Y., have obtained leave of the court to continue business for three months. Meantime the plan of reorganization is expected to be perfected. It provides for the formation of a new company to buy the assets at a judicial sale. The capital stock proposed is \$1,750,000, with a bond issue of \$750,000. The present bondholders have agreed to accept 25 per cent. in bonds and 75 per cent. in stock of the new company

## New McKeesport Tin Plate Mills

### Remarkably Rapid Construction of the McKeesport Tin Plate Company's Addition

Exceptionally good time has been made in the construction of the addition to the McKeesport Tin Plate Company's plant at McKeesport, Pa., which doubles its former capacity. Seven years ago the original plant of the company consisting of a 10-mill plant, having two trains of five hot mills each, with the necessary equipment of cold mills, annealing furnaces, tinning machinery, &c., was built. Besides doubling the number of hot mills the capacity of all the different departments was increased by the erection of this addition. In the construction of the new mills and tin house exceptionally quick time was made, and all of the contractors made individual records for rapid work. Some idea of the size of the addition can be gathered from the accompanying illustrations, of which Fig. 1 is an exterior view showing the southwest or land side, Fig. 2 shows the rear of the annealing



Fig. 1.—The New Mills of the McKeesport Tin Plate Company, McKeesport, Pa.

and the owners of the property at Cold Spring on which the shops are built have agreed to sell for \$20,000 cash and \$140,000 in bonds of the new company. It will take \$297,250 bonds and \$361,250 stock of the new company to purchase the Cold Spring property and retire the bonds. The new company will then have at its disposal \$302,750 bonds and \$638,750 stock. It will take the proceeds of these bonds to retire the \$200,000 receivers' certificates, to pay the \$20,000 cash for the land at Cold Spring, receivers' and counsel fees and furnish cash capital. The receivers and counsel are willing to accept bonds for their fees.

**A Fund for Martin, the Open Hearth Inventor.**—The Comité des Forges de France, the association of French iron manufacturers, recently started an international subscription for Pierre Martin, one of the inventors of the open hearth process of steelmaking. At the age of 85 he is now living in Central France with little means. The Comité has made a donation of 100,000 francs and has appealed to organizations of iron and steel manufacturers to join in the movement. The Iron and Steel Institute expect to raise £1000 and now has most of this amount. The German steel-makers have subscribed about \$8000. At a dinner in Paris, June 9, the Comité des Forges presented M. Martin with a gold medal.

furnaces and the coal bunkers for the gas producers located adjacent thereto, Fig. 3 is a view in the hot mills, showing combination sheet and pair furnaces, while Fig. 4 is a general interior view of the new plant.

On March 15, 1910, the erection of the structural iron work for the buildings was commenced simultaneously with the commencement of active work on the erection of the furnaces. The annealing department was an entirely new structure, as it was deemed advisable to adopt producer gas fired furnaces in place of the coal fired ones used in the old plant. The increase in the capacity of the plant necessitated larger boiler capacity and mechanical stokers and coal and ash handling machinery were installed.

All the buildings included in the new work are supported by foundations built on piles, as the ground for the most part was cinder fill, with an underlying stratum of quicksand. The work of excavating and pile driving was begun about September 1, 1909, by the Cranford Paving Company, Washington, D. C., and altogether about 15,000 ft. of concrete piles was driven, most of it sunk to 62 ft. below the mill floor level. The great depth rendered the foundation work, for which M. O'Herron & Co. were the contractors, unusually difficult. Diescher & Sons Company, Pittsburgh, Pa., were the engineers for the work.



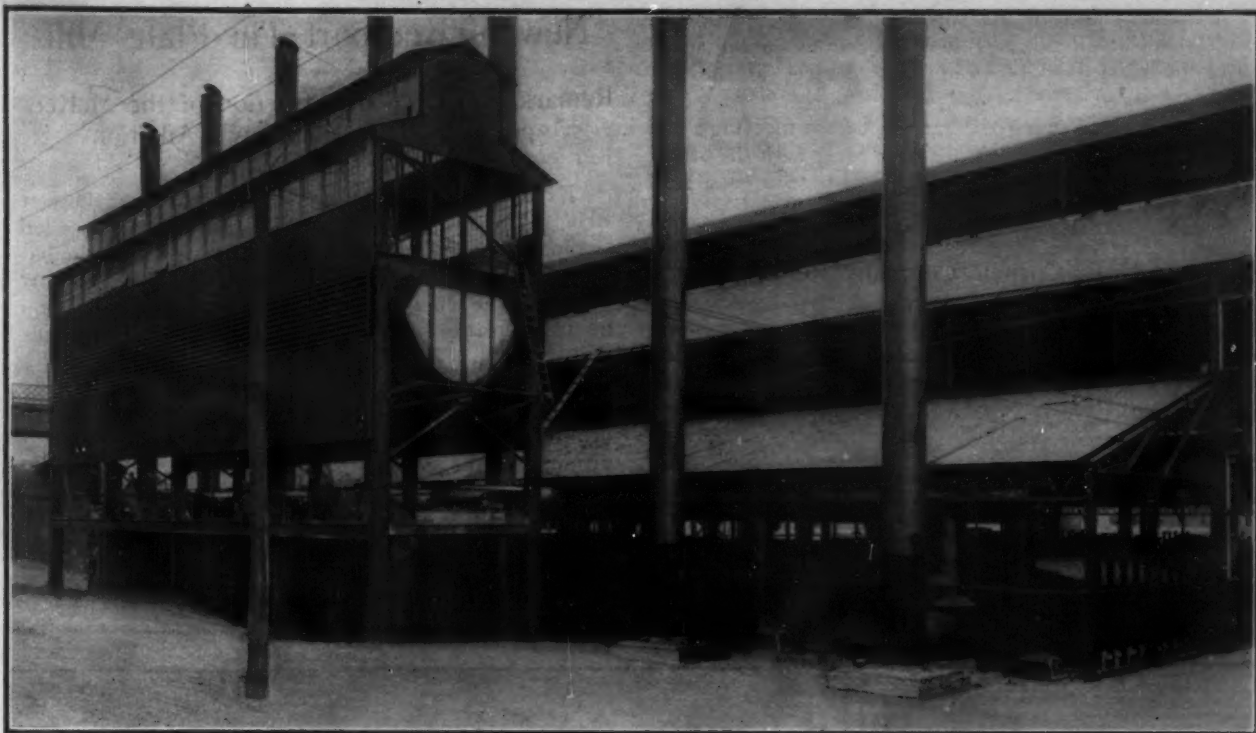


Fig. 2.—Rear of the Annealing Furnaces and Coal Bunkers for the Gas Producers.

#### Buildings

Ordinary mill construction was employed for the buildings, which are of brick and steel construction, and were erected by the Lawrence Steel Construction Company, the general contractor. All of the steel was fabricated by the Riter-Conley Mfg. Company, Pittsburgh, Pa., and the mills, engines, shears and pickling machinery were furnished by the Mesta Machine Company of that city. The tin house, assorting house and warehouse are located in one building, having an approximate area of 64,800 sq. ft., which is served by two cranes built by the Case Crane Company, Columbus, Ohio, and traveling the full length of the building. The producer house and the coal bunkers were furnished by the Independent Bridge Company, Pittsburgh, Pa., and the concrete of the latter was reinforced with Ferrocement, patented by the Brown Hoisting Machinery Company, Cleveland, Ohio.

#### Boiler Plant and Water Supply

The boiler plant is located along the river front. The boiler house stands back about 40 ft. from the dock line, and the intervening space is used for storing coal, which is brought in barges and hoisted by the yard crane and clam shell buckets to the coal handling machinery, where it is crushed and classified into the various grades for the stokers, sheet and pair furnaces and gas producers, and is conveyed automatically to them. A series of driven wells located in a tunnel about 24 ft. under the boiler house floor supplies the water used in the plant, because the water in the Youghiogheny is very injurious to boilers. The water obtained from the wells has very little or no injurious effects on the boilers. The pumping plant consists of Epping-Carpenter 1,000,000-gal. units, which pump the water from the wells to the standpipe, shown in Fig. 1. This standpipe was built by the Petroleum



Fig. 3.—View in the Hot Mill, showing the Combination Sheet and Pair Furnaces.

Iron Works Company, Sharon, Pa., and is 24 ft. in diameter and 100 ft. high. The boilers are of the Stirling type, built by the Babcock & Wilcox Company, and have a nominal rating of 3600 hp. The mechanical stokers employed to feed the boilers were supplied by the Green Engineering Company, Chicago, Ill.

The power house equipment includes two 300-kw. generating units, built by the Allis-Chalmers Company, Milwaukee, Wis., and engines to drive them furnished by the Mesta Machine Company, Pittsburgh, Pa. Either one of these units is sufficient to supply the current required by all the electrically driven machinery about the works, only one need operate at a time. The other, while held in reserve, can be cleaned or repaired if necessary.

#### Furnaces

George J. Hagan, Pittsburgh, Pa., designed and constructed all the furnaces throughout the plant and also did all the firebrick work about the boilers and tinning machinery. The annealing department contains seven

the mills can handle without any forcing or scaling of bars.

#### Gas Plant

The producer gas is carried by overhead flues the full length of the seven annealing furnaces. One special feature in the design of these furnaces is the introduction of the gas in relation to air ports, which results in so perfect a mixture of air and gas that it ignites in a cold furnace without building a wood fire to raise the initial temperature; the good grade of gas delivered by the producers partly accounts for the quick ignition. The four gas producers are of the continuous water seal type, located in the rear of the furnaces, as shown in Fig. 2, and are all connected to the main gas line, thus forming one unit. Each producer is 11 ft. in diameter and 12 ft. high and possesses the proper grate area to gasify approximately 15 tons of coal in 24 hours. No mechanical devices are used for poking and cleaning, but this is considered to be offset by other advantages of simplicity of design, mechanical conveying of coal to the hoppers, and reducing the cost of



Fig. 4.—General View in the Addition to the McKeesport Tin Plate Company's Plant.

double producer gas fired furnaces, each having an inside clearance of 17 ft. in width and 19 ft. in length. Eight pots, each containing 10,000 lb. of black plate, can be accommodated at once. Five of these furnaces are sufficient for general operation, the other two being held in reserve. These furnaces are strongly built with thick walls, as practice has demonstrated that a furnace wall cannot be too heavy, since the fuel consumption and cost of maintenance is thereby reduced considerably. This feature of stability is noticeable in all the equipment of the plant. The furnaces are in the extension of the annealing furnace building and traveling cranes serve them. The charger tracks are of sufficient length that a full charge can be withdrawn and the furnace doors closed to retain the heat, thus making the process continuous.

The sheet and pair furnaces are of special design worked out by J. E. Lauck, general manager of the company, and are suited to the special requirements of his plant. The world's record for tonnage has always been held by this mill and a furnace was required that will deliver bars as fast as the mills can handle them. In this respect the new equipment is said to be superior to the original plant. No test has been made for capacity, but these furnaces are turning out all that

labor about the gas house as compared with the old system of hand firing.

The bars are delivered from the railroad to the bar yard, which is served by a 15-ton Case crane. The bar shears are located at the gable of the hot mill building with their receiving tables extending into the bar yard. The capacity of the shears is such that one can supply the entire plant. Cranes and racks carry the bars to the sheet and pair furnaces in the hot mill department. The product goes through the processes of pickling, annealing and cold rolling in the usual way and then passes to the tinning department, which has 40 64-in. tinning machines made by the Anderson Foundry, Elwood, Ind., and the regular equipment of cleaning machinery. One feature in this department worthy of special mention is that the plates are automatically handled between the tinning and the cleaning machines by special machinery designed by Mr. Steiner, superintendent of this department.

The estimated output of the plant, based on the capacity of the first 10 hot mills, is 7500 tons per month. In the construction of this work care was taken that everything should be simple and strong enough to avoid as far as possible any likelihood of shutdowns because of broken apparatus.



### The Rockford 14-In. Engine Lathe

A new engine lathe nominally swinging 14 in., but capable of having the swing increased to 16 in., has been designed and built by the Rockford Lathe & Drill Company, 1827 Fourteenth avenue, Rockford, Ill. The tool which is shown in the accompanying illustration is of the New England type of its maker, and is well adapted to either manufacturing or tool room work. Among the special features of this lathe are a special supporting guide for the carriage and a very wide range of thread cutting.

As will be noticed from the illustration, the head stock is very long between the bearings and is driven by a five-step cone pulley, having very wide faces. Large bearings fitted with high grade babbitt metal are provided, and this feature, together with the great amount of power produced by the wide faced cones, is said to eliminate all chattering while turning or screw cutting is being done. Large thrust bearings which can be easily adjusted or taken up for wear are provided for the spindle. The tailstock is of the off-set type, and the clamping lever is of such a design that it is possible to move it quickly in either direction without using a wrench. For securely fastening the tailstock when heavy work is being done a device is provided at the rear of the tailstock, and by tightening the nut all danger of the tailstock slipping is avoided.

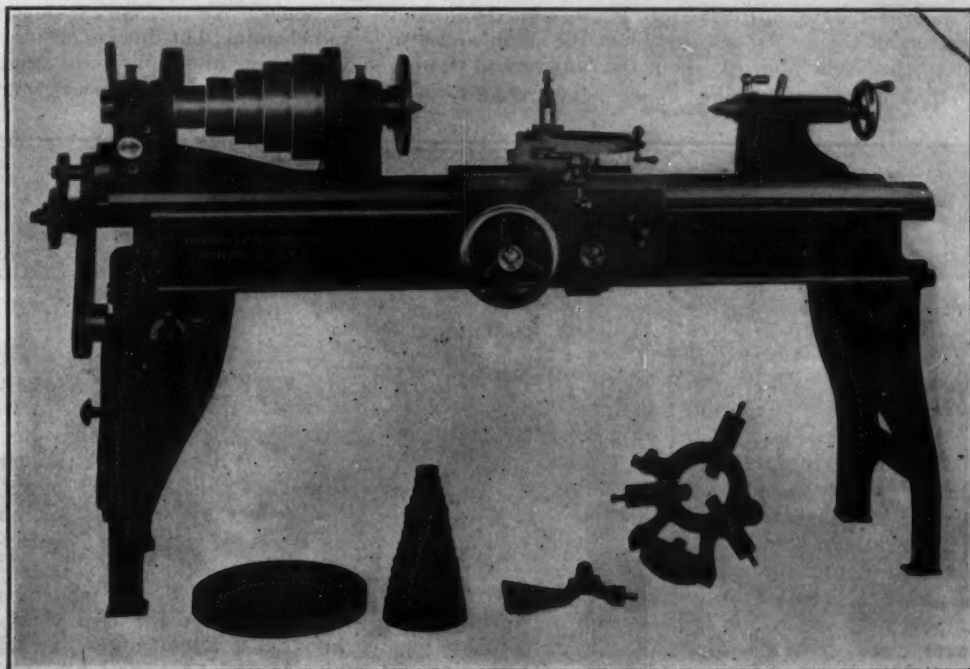
The regular heavy pattern carriage of the maker is furnished. There is, however, a special new feature in the shape of a guide underneath the carriage center, which acts as a support and insures a steady cut being taken without any chatter. Three bearings are provided for the carriage, another exclusive feature of this line of lathes. A special cover renders the carriage slide both chip and dust proof. The design of the apron is very heavy, and to take care of all strains the shafts are provided with double inside bearings. All the worm gearing runs in oil. A new and special type of locking nut on the cross slide makes it possible to lock the compound rest or tool slide along the lead screw quickly. The compound rest can also be set at an angle of 90 degrees. In the design of the lathe provision has been made to avoid dirt getting down to the lead screw. When it is desired to substitute a taper attachment all that has to be done is to loosen the locking nut.

Six feed changes are provided. The small lever operating over a semi-circular segment at the left end of the lathe, through gears, provides for three of the feed changes, and these are doubled by shifting the 1¼-in. belt driving the feed to the other step of the cone pulley. A very powerful drive is obtained through the gearing in this box, and if a very heavy feed is required this can also be secured without injury to the tool. The six cutting speeds for longitudinal and cross cuts vary from 0.012 to 0.073 in. and from 0.014 to 0.082 in., respectively. A

heavy box pattern bed reinforced with ribbing is used and is so arranged that a taper attachment can be applied at any desired time after purchase. Large V ways provide a good bearing surface for the carriage. Heavy legs support the bed and the front one is a cabinet with a separate compartment for each gear, where they are kept clean.

The principal dimensions and specifications are:

Swing over bed, inches.....	16
Swing over carriage, inches.....	9¼
Length of carriage, inches.....	19
Length of spindle, inches.....	28 <sup>5</sup> / <sub>16</sub>
Diameter front bearing, inches.....	2½
Length of front bearing, inches.....	4
Diameter rear bearing, inches.....	2½
Length of rear bearing, inches.....	3
Length of bed, feet and inches.....	6 6
Distance between centers, inches.....	36
Diameter of hole through spindle, inches.....	1½
Ratio of back gears.....	7½ to 1
Net weight, pounds.....	1900



A New 14-In. Engine Lathe, Built by the Rockford Lathe & Drill Company, Rockford, Ill.

When equipped for screw cutting this lathe will cut any number of threads from 1 to 92 per inch.

The Scottsdale Foundry & Machine Company, Scottsdale, Pa., manufacturer of coal and coke works equipment, has recently taken on another line of work for iron and steel mills. It has considerable business on its books for gas producers, castings for sheet and pair furnaces, and a large contract for special equipment for smelting copper, for use at the plant of the United States Smelting, Refining & Mining Company, Salt Lake City, Utah. The company is also furnishing a new hearth jacket for one of the blast furnaces of the National Tube Company, McKeesport, Pa. It is the intention to begin the manufacture of a line of vertical gas engines from 125 to 200 hp., especially designed for electric lighting. A recent test of one of these engines showed excellent results.

Gas and electric light plants in 10 cities and towns in northern Indiana have been merged under the name of the Northern Indiana Gas & Electric Company, with headquarters at South Bend, Ind. Charles H. Geist of Philadelphia is president of the company. Benjamin S. Walters, manager of the South Bend plant, the largest in the consolidation. The others are the Plymouth Lighting Company, at Plymouth, and the plants at Hammond, Whiting, East Chicago, Indiana Harbor, Chesterton, Porter and Michigan City. The merger involves \$2,000,000.

## A Large Lodge & Shipley Crankshaft Lathe

### Details of the Crankshaft Turning Attachment

The Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, has recently designed the large crankshaft lathe shown in the accompanying illustrations. Although turning crankshafts is the primary purpose of the tool, it can also be used as an ordinary engine

the shaft to be set for pins at different angles. The chuck is located the proper distance off center to give the correct throw for the crank pin to be turned, by a steel strip, B, bolted in the slot at one side of the chuck plate. When turning pins the crankshaft and chuck are counterbalanced by weights attached to the face plate opposite the chuck. The outer support E, which is a carrier chuck and not a driving head, as the drive for the crankshaft is from the face plate end only, holds the tail end of the shaft while the pins are being turned. The hinged bearing N, attached to the central rotating chuck, grips the shaft and holds it the proper

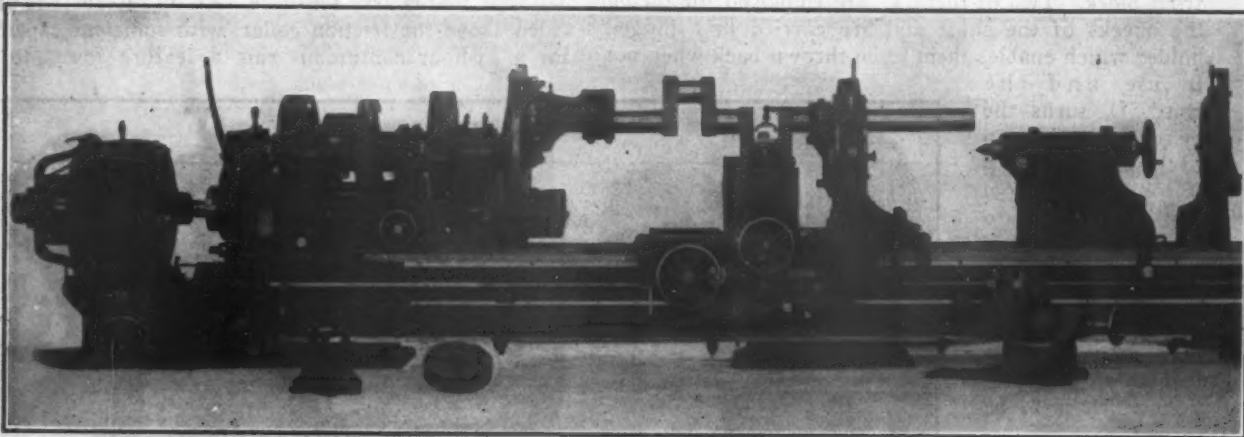


Fig. 1.—The Crank Shaft Turning Attachment Fitted to a 36-42 In. Lathe, Built by the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio.

lathe, as it is capable of handling the full range of work suited to that class of lathes. Fig. 1 is a general view of the machine, which is a 36-in. standard patent head lathe of the maker raised to swing 42 in., with the crankshaft in place. Details of the crankshaft turning attachment are given in Figs. 2 and 3. This attachment can be adjusted to bring any desired crank pin to the center line of the lathe and affords a powerful drive while at the same time the shaft is rigidly supported so that there is practically no spring under heavy cuts.

As the attachment is needed only for turning the pins, that portion of the work alone will be described. The turning of the bearings is ordinary straight turning between the centers and is performed separately and prior to the turning of the pins. During the performance of this operation the shaft is supported by the swiveling chuck on the center of the face plate and the tailstock center.

The swiveling chuck A is attached to the face plate and supports one end of the crankshaft by gripping it securely in a bearing having a hinged cap. The chuck swivels upon a base which has a tongue fitting a planed slot passing through the center of the face plate. This enables the chuck to be placed so that its center coincides with the center line of the lathe for turning shaft bearings or to be set eccentrically any desired amount to turn crank pins. The swivel base also permits

distance off center. The outer support is provided with an annular bearing, F, which enables the chuck carrying the eccentrically located shaft to revolve freely. In this way the clamping bearings of both the swiveling chuck and the outer support always remain in line as the shaft revolves, and the latter also serves as a steady rest since it grips the shaft close to one of the cheeks.

Before the hinged caps are finally tightened to grip the crankshaft the two clamping rings are brought into exact alignment with each other by the locking pins H and N. The locking pin for the face plate is carried in a bracket attached to the inner ways of the bed, and a convenient means for sliding the pin into or

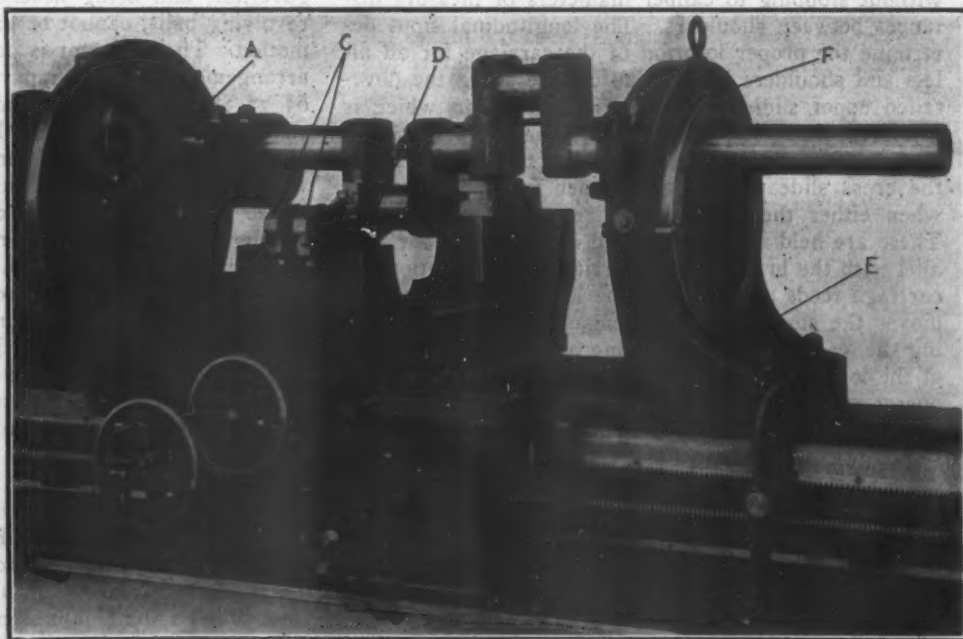


Fig. 2.—A Detail of the Crank Shaft Attachment.

out of its seat in the face plate is furnished by a star knob on the front of the supporting bracket. The locking pin in the outer support is operated similarly. These two pins are slipped into their seats before placing the



crankshaft in the lathe as this exactly aligns both chucks, and the shaft can be placed in them and gripped without danger of springing. The locking pins are then withdrawn, leaving the chucks and shafts free to revolve.

Front and rear tool rests connected together are used, and these are cast integral with the long cross slide mounted upon the bridge of the carriage. This slide is equipped with power feed and hand movement, and a firm support is given to each tool almost out to the cutting point by an upright post, thus preventing an excessive overhang. Three tools are carried in the front block. Two of them, C, are employed for facing the cheeks of the shaft and are carried in a hinged holder which enables them to be thrown back when not in use, and the third, D, turns the cylindrical portion of the pin. A holder, K, on the rear tool rest contains two cutting tools spaced the proper distance apart to fillet the ends of the pin and thus determine the length of the portion which is to be turned.

Adjustable stops for the longitudinal and cross feeds are provided of the same type as those on the maker's 16-in. lathe, an illustrated description of which appeared in *The Iron Age* November 18, 1909. The use of these stops greatly increases the output as once the proper setting is made for the first piece, the operator can reproduce any number of duplicate parts without stopping to caliper diameters or measure distances between shoulders. The longitudinal stops determine the proper location of the carriage for all fillets and shoulders and are adjustable along the dove-tailed upper sliding surface of the stop bar, which is supported along the front of the lathe bed beneath the apron. The diameter stops control the movement of the cross slide to give the proper finished diameters when either the front or the rear tools are cutting. These are held in T-slots milled in a rotating bar parallel with the bridge of the carriage. In operation the carriage feeds up to one of the longitudinal stops and moves the stop bar, thus disengaging the clutch driving the lead screw and throwing out the feed. A latch at the lower left hand corner of the apron enables the operator to throw the jaw clutch and stop bar back to their original positions and reengage the feed which remains in until thrown out by the next stop. Each cross stop can be set to any position in its slot and the entire bar rotated by the star knob at the front of the apron which successively brings the different stops into position where they will be engaged by the lug on the cross slide as the tool is fed up to the cut.

The equipment furnished includes the regular engine lathe parts, such as small face plates, compound rest, full swing rest and wrenches as well as the crankshaft attachment. To change the lathe from a crankshaft turning tool to an ordinary engine lathe it is simply necessary to remove the crankshaft attachment and substitute the compound rest for the connected front and rear tool blocks which can be easily and quickly done.

### Bass Engine for Republic Iron & Steel Company

The Bass Foundry & Machine Company, Fort Wayne, Ind., has recently installed at the Mahoning Valley Works of the Republic Iron & Steel Company a 40 x 48 in. left hand, heavy duty, rolling mill, Corliss engine. The shaft is of open hearth hydraulic forged steel, and is provided with a steel coupling for connection to an 18-in. mill. The flywheel is of the built-up type, 18 ft. diameter and weighs 90,000 lb. The crank, crosshead, piston head and follower, and valve gear parts are all steel castings. The governor is of the fly ball type, and is very sensitive. An oil reservoir is provided above the friction collar, with sufficient capacity for a 24-hour continuous run, a feature found to be

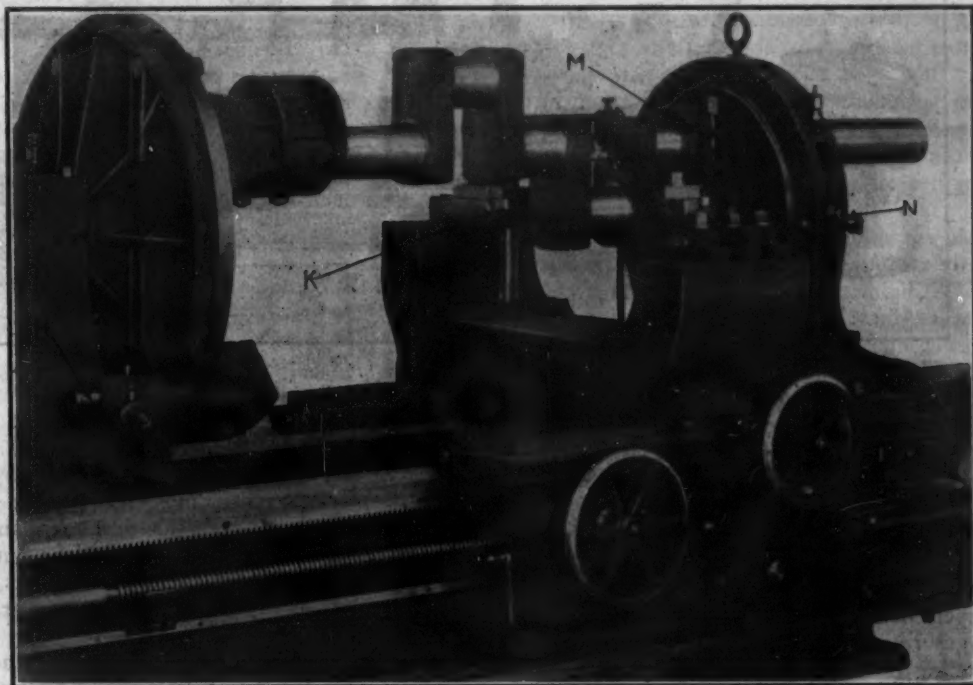


Fig. 3.—A Detail of Outer Support and Locking Pins.

very desirable, for should this collar become dry and begin to cut, it seriously affects the sensitiveness of the governor, and being necessarily located between the revolving balls, cannot be oiled while the engine is in motion. The governor is provided with a cone pulley arrangement so as to impart to the engine a speed of 65, 77, 88 or 100 rev. per min. The releasing gear consists of a sliding block with large wearing surfaces, the ends faced with steel of ample width, which engages with a similar steel block on the valve crank and is released by a cam, which is controlled by the governor coming in contact with a roller on the sliding block and causing the latter to withdraw sufficiently to release the valve, which is then closed in the usual way by the dash pot. A single rod from the governor operates both cam collars. Besides the working cam there is a safety cam, which shuts off the steam should the governor belt break or run off the pulley. The exhaust valves are driven by a separate eccentric, so that proper compression can be had without affecting the steam valves, also allowing a longer range of cut-off. The dash pots are of the vacuum type provided with large air cushions. The Bass Foundry & Machine Company is also building another engine for the Sylvan Works of the Republic Iron & Steel Company, at Moline, Ill. This engine is a 32 x 48 in. left hand rolling mill type engine arranged for direct connection to a 16-in. mill train, and also provided with a heavy rope wheel and companion wheel for driving a 12-in. train.

In order to get a factory fund the Commercial Club of Columbus, Ind., will ask taxpayers to contribute 1 per cent. of the tax duplicate of the city. This will yield \$60,000.

# Blast Furnace Gas Power Practice\*

Operating Experiences at the South Chicago Works of the Illinois Steel Company

BY HEINRICH J. FREYN,† CHICAGO, ILL.

The use of blast furnace gas engines in this country was first undertaken in 1902 by the Lackawanna Steel Company at Buffalo, followed four years later by the United States Steel Corporation in several of its plants. The import of the problem of utilizing the surplus gas may be realized by considering that 11,000,000 tons of pig iron was produced in 1909 by the United States Steel Corporation, and that for each ton of iron made per day, 25 b. h. p. is available for purposes outside of the power requirements of the blast furnaces if produced in gas engines. If, therefore, all the blast furnaces of the corporation were blown by gas blowing engines and all other furnace requirements furnished by gas electric engines, 750,000 b. h. p. would be available for other purposes. In 1907 there were installed at one of the largest steel plants in this country four Allis-Chalmers double-acting, four-cycle, twin tandem gas engines, gas cylinders, 42 in. diameter, 54 in. stroke, operating 2000-kw., 25-cycle, three-phase, 2200-volt, alternating-current generators at 83.3 rev. per min. This addition to the existing steam electric equipment was completed in 1908, and the electric power produced by these gas engines is used for electrically driven rolling mills and general light and power purposes. The gas driven generators operate parallel with the adjacent steam units and with other gas driven generators located 20 miles away (Gary, Ind.). The plant has been in regular service for two years. The experiences and results described in the following pages represent the average of daily observations extending over one year's time.

The gas supply for operating all the gas engines is taken from six blast furnaces, all of which in 1909 were blown by steam blowing engines, while the electric power for the plant was derived from both steam and gas driven generators. The quantity of gas available for the engines was therefore considerably less than it will be when four of these furnaces are blown by gas blowing engines. Because of the general business depression at the beginning of 1909, only three, and in the months of March and April only two, furnaces were in blast. Normal conditions were resumed about May or June, while all six furnaces were in blast during the months of September and October only.

While the logical way would have been to begin with gas blowing engines, instead of gas electric engines, increasing instead of reducing the available quantity of blast furnace gas, such was impossible because of the demand for more electric power for the new electrically operated mills, as well as on account of local conditions of steam supply for the furnaces, which at that time prohibited the removal of a large boiler house, now occupied by the new gas blowing engines. Nevertheless, although this power plant, as it so happened, had to be operated for almost two years under most unfavorable and exacting conditions, valuable experience was gained, in that it was found that such a power plant could be maintained in operation—although with interruptions—with only two furnaces, and for a short period even with only one furnace in blast.

## Output of Power Plant

The average kilowatt-hour produced by the gas power plant during 1909 was 5760, or 72 per cent. of

the total capacity, and this average for various months varied from 66.5 to 74 per cent. with two furnaces, 61.5 to 80.5 with three, 69 for four, 64 to 82.5 with five, 68.5 to 78 per cent. with six furnaces in blast. While during the first few months the number of furnaces in blast was limited, the total output of the station was not affected very materially. In fact, in March, when only furnaces Nos. 1 and 2 were in blast, 74 per cent. of the total capacity was produced, a higher figure than the average output for the whole year.

A record is kept of all shut-downs and their causes. The average monthly operating time of the station for the year was 77 per cent. of the total possible time, 14.2 and 8.8 per cent. being the percentages of the time lost

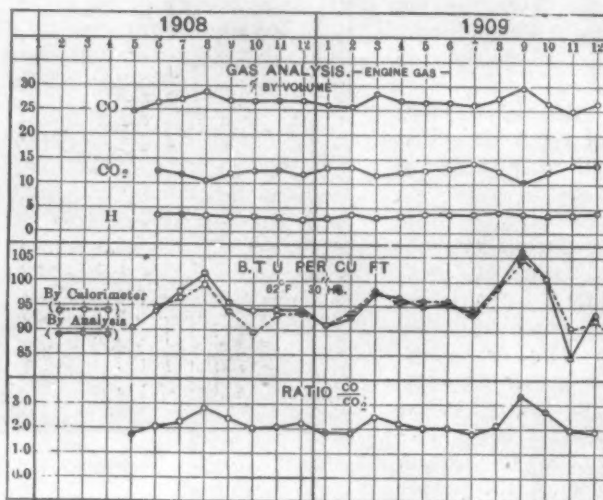


Fig. 1.—Gas Analysis and Heat Value of the Blast Furnace Gas (Monthly Averages).

due to engine repairs and to outside causes beyond control. During casting periods the engines were operated on the gas tank. In this manner operation was kept up for one whole week. The time lost chargeable to the engines was considerable for the first four months, because, owing to the uncertainty of sufficient gas supply under the conditions of furnace operation, certain repairs and alterations were made on the engines, which otherwise would have been distributed over a longer period of time. Any time lost is rigorously charged against the engines if they for any reason are not ready to resume operation at any moment. Shortage of gas was responsible to the greatest extent for lost time from outside causes in the first four months. In January this figure was as high as 94.5 per cent., and while the average for the first half of 1909 exceeded 60 per cent., the corresponding figure for the second half was only 3 per cent.

A gas power plant is endangered by lack of gas, either from collapsing of the gas holder bell or from explosion. Rotary washers, such as the Theisen, can give a vacuum of 3 in. of water and a discharge pressure from 8 to 10 in. higher. If the gas supply falls below the demand until the bell descends completely, the rotary gas washers, continuing to operate, will create a vacuum in the main gas flue that cannot be maintained as the overhead flue is connected with the atmosphere through hot blast stoves and boiler stacks. Air will therefore rush into this flue and into the gas clean-

\* From a paper presented before the American Society of Mechanical Engineers at Atlantic City, June 1, 1910. For discussion of the paper see *The Iron Age*, June 9, 1910, pp. 1376 and 1377.

† Assistant Engineer of Construction, Illinois Steel Company.



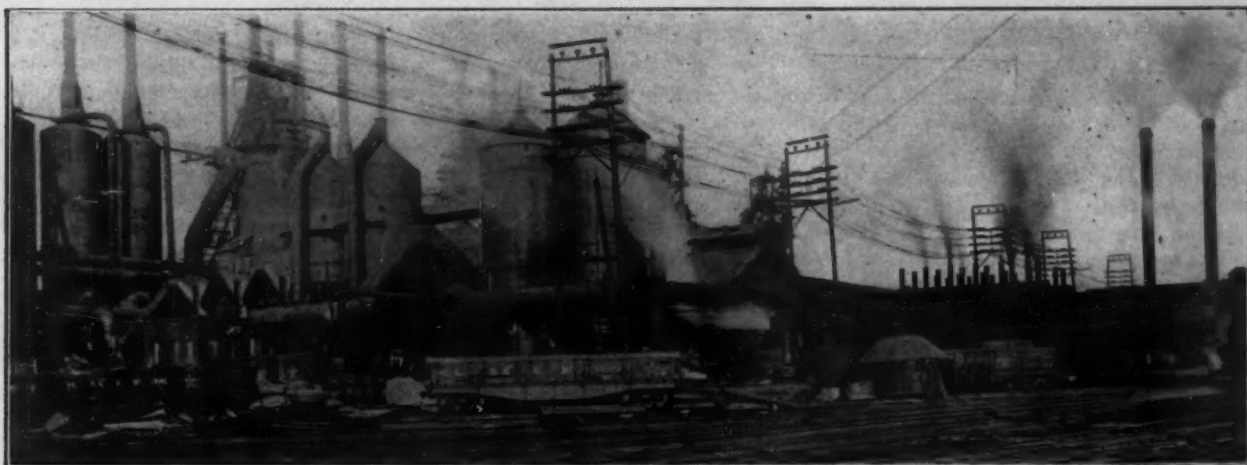


Fig. 2.—General View of the Gas Cleaning Plant at the South Chicago Works of the Illinois Steel Company in 1908.

ing plant and be drawn into the rotary washers together with whatever gas is supplied and discharged into the gas holder. Under these conditions the gas holder bell is not in danger from collapsing, but should back-firing occur in the engines the air and gas mixture in the pipe system would explode, possibly wrecking the whole installation by a series of explosions.

To prevent such an accident independent telephone lines, recording instruments, automatic alarms and indicators to show the position of the gas holder bell are provided. The practice is to shut off the gas at certain gas fired boilers as soon as the pressure in the overhead gas flue drops below a predetermined point. Sometimes as many as 24 boilers are fired by coal exclusively. If this is not enough, stoves are taken off for short periods, and finally one or more gas engines are shut down. It is frequently necessary to keep several gas engines running, with the gas pressure dropping below the danger point, if the operation of certain departments dependent upon electric power is maintained with any regularity. It was decided that the installation of costly safety appliances was not warranted as the conditions of gas shortage are exceptional and of temporary nature only. Besides, responsible operators can use good judgment, which automatic safety devices do not possess, to decide whether shut-downs are necessary. If safety devices are considered automatic circuit breakers to shut off the power at the rotary washers and simultaneously interrupt the ignition circuit of the gas engines are better than butterfly or check valves between rotary washers and gas holder, which shut off delivery under the control of the gas pressure. While in both cases the aspiration of air by the rotary washers is effectively prevented, the former device protects not only the gas cleaning plant, but also the gas holder, while the latter may cause collapsing of the holder bell by isolating it from the gas supply.

#### Quantity and Quality of Gas Supplied to Engines

The amount of gas produced by each blast furnace is calculated and distributed in proper proportion among the different places of its consumption. Monthly gas distribution sheets give a record of the average daily tonnage of each furnace, the kind of blast, natural or dry, the kind of coke used and the coke consumption per ton of iron; further, the average gas analysis for each furnace based on daily determinations of continuous 24-hour samples, the heat value per cubic foot at 62 degrees F. and including the sensible heat of the

gas at 500 degrees F., the temperature of the air at the blowing engines, the number of cubic feet of air blown per minute, and the average blast pressure. From these data the quantity of gas produced by each furnace per minute is calculated. The distribution of the gas from one blast furnace based on such calculations is given in Table 1:

Table 1.—Distribution of Gas from Blast Furnace No. 6, August, 1909.

	Million B.t.u.	Per cent.
Total gas generated.....	324.1	100
Stoves and leakage.....	130.0	40
Blowing engines.....	92.1	28.4
Used at furnace.....	9.0	2.8
Auxiliaries.....	4.6	1.4
Total used for blast furnace operation	235.7	72.6
B.t.u. surplus for furnace.....	88.4	27.4

B.h.p. equivalent of surplus..... 1470

An excellent practical indicator of the gas quantity

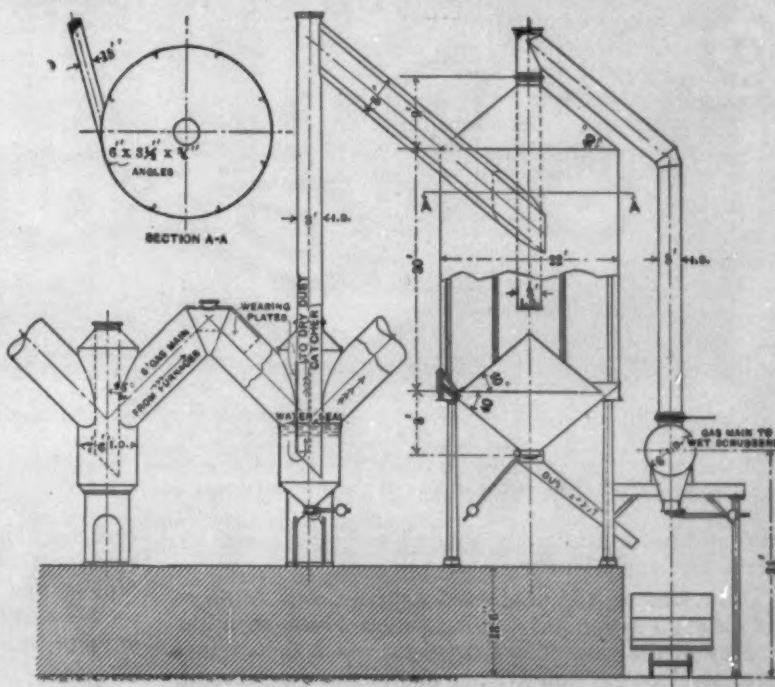


Fig. 3.—A Detail of the Dry Dust Catcher.

available for engine operation is the gas pressure at the cleaning plant. With more than three furnaces in blast the pressure is always sufficiently high to make operation of the gas power station perfectly safe. While the quantity of blast furnace gas varied considerably, due to the generally unfavorable conditions which existed early in 1909, the quality of the gas was also found to vary materially in chemical composition and heat value. These were influenced by changes in the furnace burden, the kind of product, basic iron, Bessemer iron, spiegeleisen or ferrosilicon and other causes. The blast furnaces discharge their gas into

one common overhead gas main supplying stoves, boiler houses and gas engines.

Conditions were decidedly better in the second half of 1909, so far as uniformity of the gas is concerned, but changes in furnace operation always affect the quality of the gas. Whenever the supply from the furnaces happens to cease disturbances are created in the regular flow and therefore in the quality. The gas engines are then likely to back-fire or have premature explosions and become very unsteady. Slipping of the furnaces was very frequently followed by back-fire and premature explosions and the latter could in very many cases also be traced to leaking tuyeres or hot blast valves; the gas engines often served as an indicator of such leaks.

In some instances it was the sudden increase in carbon monoxide which caused back-firing. The pressure of the cooling water for tuyeres and hot blast valves was reduced to a little below the normal blast pressure on all furnaces. Thus water leaks into the

plotted for each month since June, 1908, when the systematic records were begun. The discrepancies in the heat values as computed, and as determined by Junkers calorimeter, are explained by the fact that analyses are made about every 3 hours, while calorimeter readings are taken almost continuously during the day.

The blast furnace gas for the engines is first subjected to dry and wet scrubbing in the preliminary cleaning plant, and subsequently undergoes refining by Theisen washers in the secondary washing plant. Fig. 2 is a view of the complete cleaning plant as it existed in 1908. When the gas-cleaning plant was designed in 1906, the raw gas was cleaned only by the usual small dry dust catchers at the end of the downcomers of each furnace, and it was decided to install two special dry dust catchers of large capacity to remove the bulk of the heavy dust.

#### Preliminary Gas-Cleaning Plant

The raw gas on leaving the overhead flue first passes a water seal serving to shut off the gas power plant from the general system in case of necessity, and enters an unlined self-cleaning zigzag gas flue 6 ft. in diameter. Fig. 3 shows a detail. By means of water seals in the dust legs supporting the zigzag flue and spectacle valves at the discharge points into the collecting main, each dust catcher may be cut out for repairs or cleaning. Neither zigzag main nor dry dust catchers were lined with firebrick, as it was desired to take advantage of the reduction of temperature by radiation of heat through the unlined plate work. At all points of sudden change in direction of the flow of gas, wearing plates were provided. These can be removed and replaced through manholes. The dust legs, as well as the dry dust catchers, are high enough to discharge the accumulated flue dust into railroad cars by means of bell valves and dust spouts.

The dry dust catchers, two in number, and operating in parallel, are 22 ft. in diameter by 31 ft. high, with 9-ft. cones at each end. They are given tangential gas inlets, and by inclining the flattened gas inlet pipe the gas is caused to travel in long spirals from top to bottom, thus lengthening the path, and angle irons were placed vertically on the inside of the shell to increase friction; the gas travels at 1.5 ft. per second. The bottom cone was separated from the cylindrical part by an inverted cone arranged umbrella-wise to prevent the dust accumulated in the bottom cone from being stirred up by disturbances caused by furnace slipping and re-entering the gas. The gas leaves near the apex of the umbrella, passing through a self-cleaning pipe into the collecting main and thence to the wet scrubbers.

From the 6 ft. 6 in. collecting main the gas passes to the wet scrubber, shown in Fig. 4, through self-cleaning pipe lines. The piping arrangement permits operating the original two wet scrubbers in series, or in parallel, and water seals allow shutting off either wet scrubber for cleaning. From the start the two wet scrubbers were operated in series. The gas enters each at the bottom of the shell, which is 22 ft. in diameter and 55 ft. high. The inside is divided horizontally into six compartments, each containing eight rows of white pine slats, forming hurdles. All hurdles were placed in the different rows and compartments so that the slats of each upper row straddle those of the row below, thus obtaining a continuous checker arrangement without any channels.

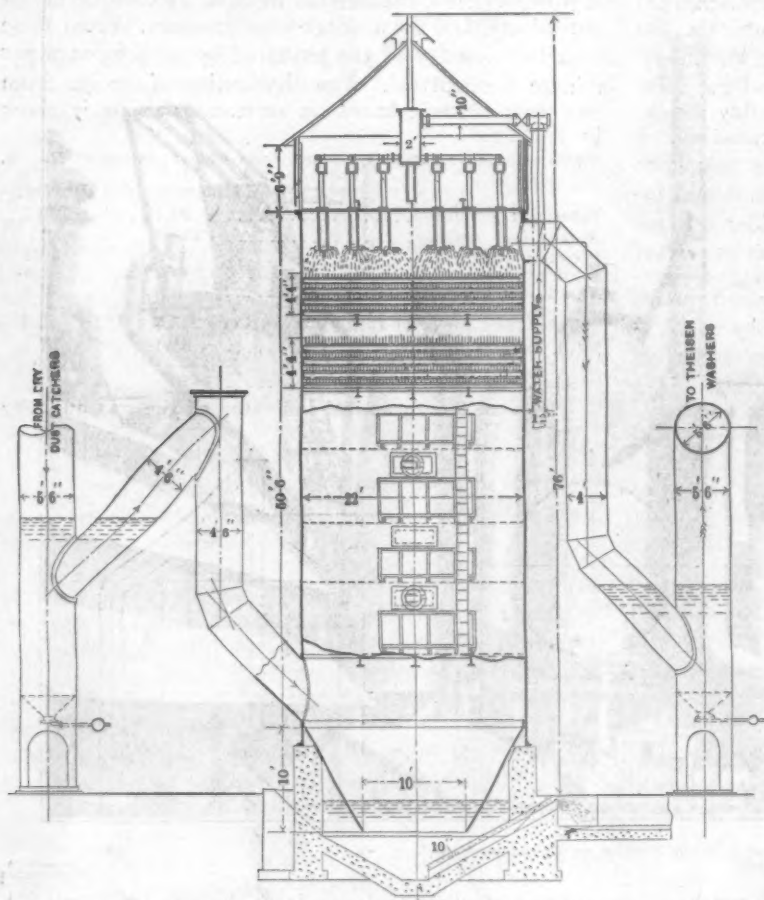


Fig. 4.—Sectional Elevation of One of the Wet Scrubbers Nos. 3 and 4.

furnaces were effectively stopped and one cause for premature explosions removed.

The kind of iron produced by the different furnaces at different times had a considerable effect upon the quality of the gas. The richest gas which the engines ever received gave an average analysis of 4.7 per cent.

$\text{CO}_2$ , 34.9  $\text{CO}$ , 3.2  $\text{H}$  and 0.16  $\text{CH}_4$ . The ratio  $\frac{\text{CO}}{\text{CO}_2}$

was 7.92 and the heat value by analysis 123.3 B.t.u. The average corresponding B.t.u. value determined by calorimeter was 122.5 per cubic foot. The leanest gas had an average composition for the month of 13.8  $\text{CO}_2$ ,

24.7  $\text{CO}$ , 3.59  $\text{H}$  and 0.19  $\text{CH}_4$ . The ratio  $\frac{\text{CO}}{\text{CO}_2}$  was

1.79 and the heat value 86.7 B.t.u. The lowest heat value ever recorded was 79.5 B.t.u. per cubic foot. The full output of the generators could not be maintained, although the proportion of air and gas was changed to meet the new conditions. In Fig. 1 the average composition of the blast furnace gas is



The top of the wet scrubbers is formed by 5-16 in. flat covers, supported by 8-in. I beams. Each cover plate supports 36 sprinklers, distributed over the entire section. A stream of water falls in each sprinkler through a distance of about 8 ft., breaking up into an exceedingly fine mist by impinging on the spray plates, and as the sprays overlap the distribution of water is perfect. The lower part of the wet scrubbers dips with a conical extension into a water seal provided in the concrete foundation. The muddy water is carried off through an overflow pipe reaching to the bottom of the seal, thus keeping the water in constant circulation and effectively preventing accumulation of mud in the seal.

When early in 1909 four additional gas blowing engines for furnaces 1 to 4 were purchased an increase in the capacity of the gas cleaning plant was necessary, and it was decided to change the two original dry dust catchers into wet scrubbers. As soon as the

be used under boilers and in hot blast stoves, if desired. In 1909 it contained an average of not more than 0.318 grains of dust and not over 5.62 grains of moisture per cubic foot.

This, however, is not sufficiently pure for gas engine purposes. The importance of gas cleaning can be better appreciated if the total quantities of gas and dust which are handled in such a cleaning plant are considered. The gas engines consumed in 1909 nearly 9,000,000,000 cu. ft. This reached the wet scrubbing plant containing on an average 1.533 grains of dust per cubic foot. There was consequently carried into the wet scrubbers 865 tons of flue dust. The average amount of dust in the clean gas for the year was 0.3183 grain per cubic foot; so that it carried 180 tons of flue dust into the secondary cleaning plant. The difference of 685 tons was taken out by the wet scrubbers and carried off into the settling tanks. The wet scrubbers removed 80 per cent. of the impurities. The Theisen

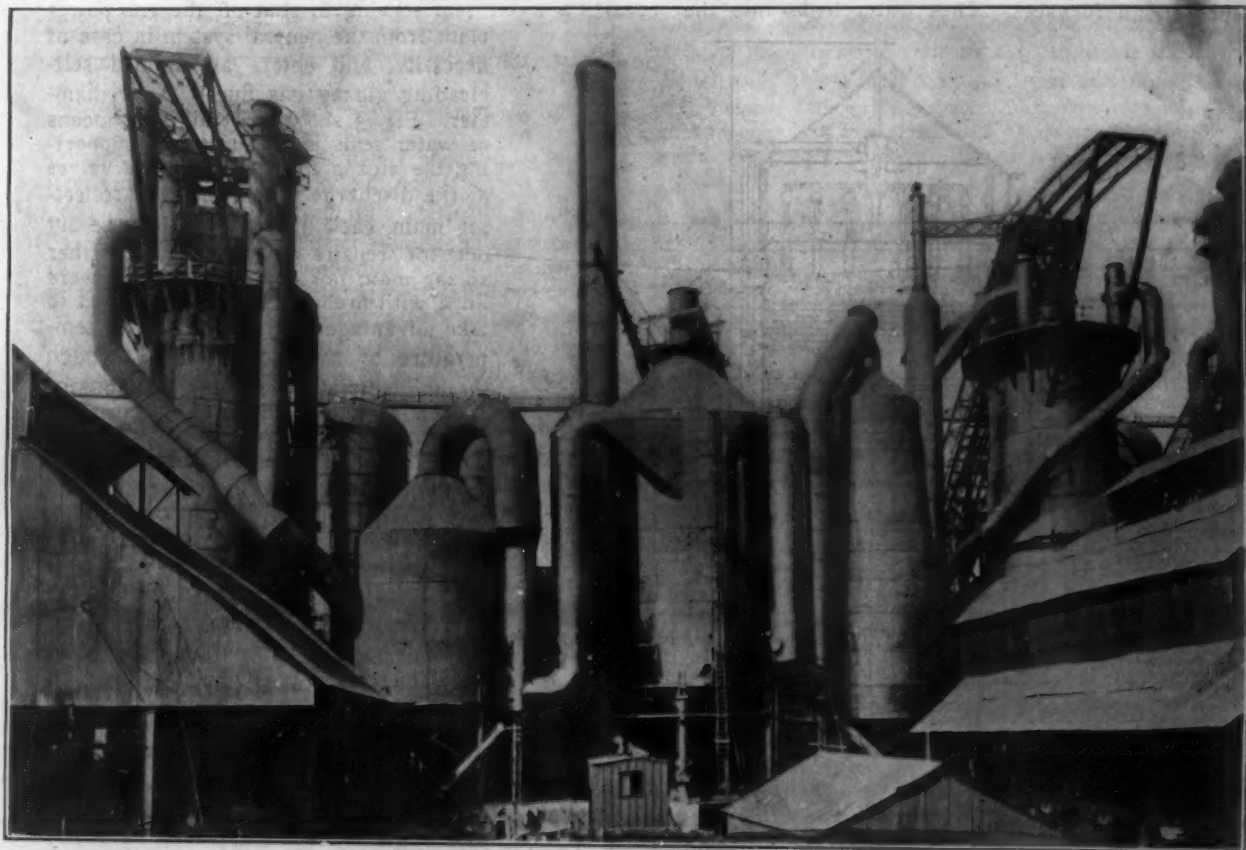


Fig. 5.—The Dry Dust Catcher System at Furnaces Nos. 5 and 6.

voluminous dry dust catcher system at the furnaces, Fig. 5, was in operation the efficiency of the dry dust catchers in the preliminary gas cleaning plant was materially reduced. These had removed a great deal of heavy, dry flue dust, but suddenly became practically useless, and only a little dust, now in the form of mud, was taken out. While the change from dry dust catchers to wet scrubbers was being made, in the second half of 1909, only the two original wet scrubbers were in operation. In the near future four wet scrubbers, of sufficient capacity to take care of the preliminary washing of the gas required by 40,000 hp. in gas engines, will be in use.

Fig. 2 shows the gas main carrying the gas from the wet scrubbers to the secondary cleaning plant. The supports of this line are dust legs, wherein water and flue dust are deposited, and drawn off occasionally through bell valves. At intervals circular water spray pipes flush the main, and where a sudden change of direction occurs sealed holes are provided, through which a thorough cleaning can be made, with fire hose and high-pressure water, during the operation of the plant. After leaving the wet scrubbers, the gas could

gas washers further took out from the gas 176.7 tons, leaving only 3.3 tons in the fine gas, since the average amount of dust in the latter was 0.00583 grains per cubic foot. The Theisen washers had, therefore, an efficiency of 98 per cent., shared by clean gas main, fine gas main and gas holder. The over-all efficiency of wet scrubbing and secondary cleaning plants was 99.5 per cent. Only a small amount remained in the engine cylinders, since the bulk of the dust is swept into the atmosphere at each exhaust stroke.

#### Secondary Cleaning Plant

The Theisen washer installation consists of five washers, each of 15,000 cu. ft. per minute capacity. They are in two rows in a fireproof building, with the clean gas main overhead between them, and inlet pipes to the suction end of each washer. The outlet pipes pass through the building to water separators and to a ring main which delivers the gas through a 5-ft. main about 500 ft. long to the power station gas holder, and through a 4½-ft. main about 1000 ft. long to the blowing engine gas holder.

The Theisen washer consists essentially of a closed

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drum fitted on its outer surface with longitudinal blades arranged in spirals. This drum, supported by a shaft in two water-cooled ring-oiling bearings, rotates at high speed inside of a stationary casing of conical shape. Suction vanes draw the gas from the inlet pipe and deliver it to the longitudinal vanes, which have an inclination to the axis of the drum so as to oppose the flow of the gas through the washer. A discharge fan at the outlet end of the drum, however, overcomes this and discharges the gas under positive pressure of a few inches of water. The gas passing through under high pressure imparts to the water introduced at several points into the casing a movement in long spirals in an opposite direction to its own travel. By the intimate action of the water on the gas the dust particles are thoroughly moistened and are thrown by centrifugal force into the rotating film of water, to be carried away through a seal into the sewer. The gas leaving the washer is charged with more or less moisture, which is removed in the Theisen washer separator, consisting principally of a removable box filled with iron shavings held in place by wire netting. The gas striking the iron shavings with great velocity deposits its moisture, and as it has to reverse its direction it cannot pick it up again, but leaves the separator in a comparatively dry condition. Gate valves serve for

tors. Each is of single lift type, with bell 59 ft. 6 in. in diameter by 36 ft. high. Both holders have separate gas inlet and outlet pipes to obtain continuous circulation and prevent pocketing of stale gas. To prevent collapse of the bell, if the supply should be interrupted and a vacuum created under it, a disk valve supported by chains from the holder crown is located above the mouth of the outlet pipe. When the bell descends completely this valve will close the outlet.

A butterfly valve in the inlet pipe to each holder is operated by the bell itself through a wire cable and a

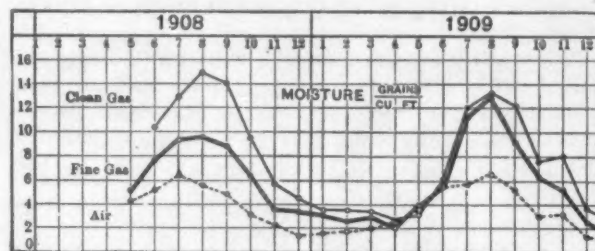


Fig. 7.—Moisture in Gas and Air (Monthly Averages).

system of pulleys. When the holder is empty, the valve is wide open. When the bell ascends a certain distance the valve throttles and finally tightly closes, the effect being the same as if the gate valves on the Theisen washer outlets had been throttled or closed. The washers continue to operate, but cease to deliver until the descending bell again opens the valve. Any number of engines can be started or shut down without the slightest adjustment at the Theisen washers. A bypass line permits the operation of the gas engines directly if the holder is out of commission. Each holder delivers the gas into a large main outside of the gas engine buildings.

Important from the standpoint of engine operation are the pressure, temperature, dryness and cleanliness of the gas. These conditions, and particularly the last, if ascertained and suitably recorded at various stages of the cleaning process, are valuable indicators of the efficiency of the gas cleaning plant.

#### Performance of the Dry Cleaning Plant

Before the existence of the dry cleaning system at the blast furnaces the two dry dust catchers in the preliminary gas cleaning plant proved very satisfactory in operation and efficiency, and the effect of unlined gas flues and dust catchers on the reduction in temperature of the gas was greater than had been anticipated. The gas leaving the furnace top averages about 400 degrees F., with the furnaces operating normally. This temperature may reach 700 and 800 degrees under abnormal conditions caused by high coke consumption, irregular working, &c., and when special grades of iron, such as ferrosilicon or spiegeleisen, are produced. In round numbers, about 50 per cent. of the sensible heat carried by the gas into the dry cleaning plant was removed by radiation.

After the dry dust catcher system was put in conditions changed considerably, as the gas passing through the voluminous unlined dry dust catchers and the overhead gas main, the brick lining of which had been removed in April, 1909, entered the gas cleaning plant at a much lower temperature than before. This is very uniform at present, averaging about 300 degrees F. The heat radiating effect of the dry cleaning plant, however, is maintained, reducing the average temperature of the gas before it enters the wet cleaning plant about 56 per cent. Since the cooling effect takes place without the use of water, it is obtained entirely without cost. This cooling to considerably below 212 degrees in 1909 caused heavy condensation in the pipes and dry dust catchers, which proved of value in the gas cleaning, since the finer particles of dust were

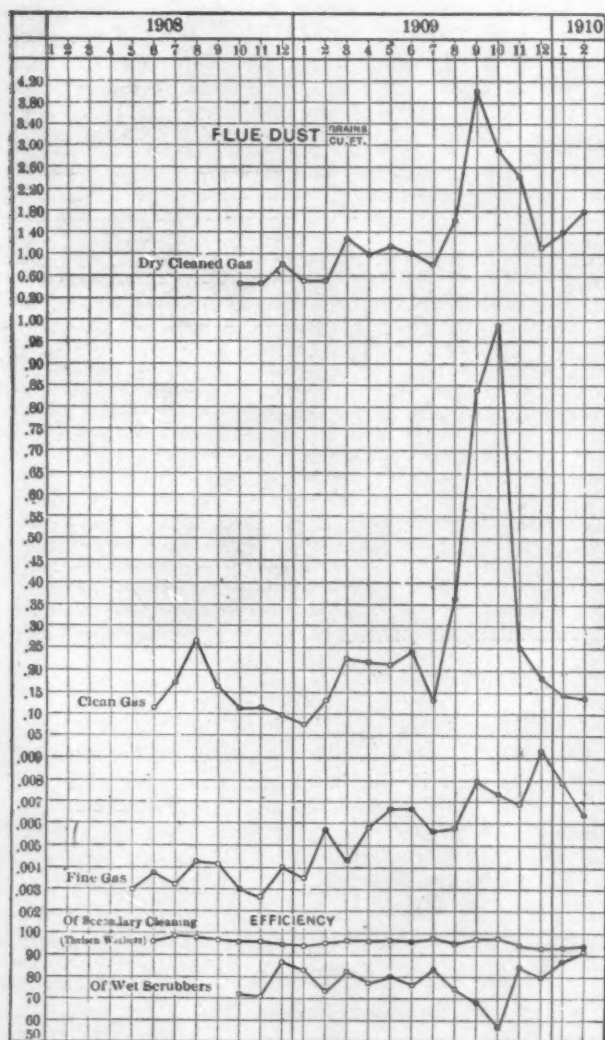


Fig. 6.—Flue Dust in Gas and Efficiencies of Cleaning Plant (Monthly Averages).

regulating the quantity of gas entering the different washers, and for shutting off any washer without interfering with the operation of the plant.

The two gas holders, of 100,000 cu. ft. capacity each, installed primarily to give a constant pressure of about 4 in. of water column at the gas engine throttle, incidentally serve as reservoirs and as water separa-



more easily separated out. The dust removed in the dry cleaning plant appeared mostly in the form of mud, which accumulated at all points of change in direction of the gas flow, and especially in the dry dust catchers where the velocity was very small. The difficulties of removing this mud during operation of the plant formed one of the reasons for abandoning the dry dust catchers at the gas cleaning plant. Concerning the dust removing efficiency of the dry cleaning plant, an idea can be gathered from the fact that on an average about 25 tons was removed every other week, while a large quantity was blown away by the wind.

The condition in which the gas was delivered to the next stage of cleaning is shown in Fig. 6, wherein the monthly averages of the dust contents in the dry cleaned gas are given. These curves indicate quite violent fluctuations, due to different operating conditions of the furnaces. Heavy slipping will increase the dust contents in the raw gas beyond measure and causes a momentary rise in the pressure. Considerable amounts are added from the deposits in pipe lines, dust legs and dry dust catchers, accumulated for hours and days, and disturbed by the sudden high velocity of the gas. The furnace product has a great influence on the quantity of flue dust. While Bessemer and basic furnaces produce about equal amounts, ferrosilicon and spiegel furnaces make very much more, which, moreover, is very fine and cannot easily be removed from the gas—especially not by dry cleaning alone.

#### Performance of Wet Scrubbing Plant

The preliminary wet scrubbing plant was particularly successful and efficient, and the operation of the wet scrubbers has been continuous ever since starting, in November, 1907. Examinations invariably showed them in perfect condition. Aside from a thin coating of slimy flue dust, which seems to have penetrated into the pores of the wood, there was no sign of deposit on or around the hurdles. Since oxygen is practically entirely absent, rotting of the wood is impossible. No difficulties were encountered in the operation of these



Fig. 8.—Detail of the Dust Deposit in One of the Theisen Washers.

scrubbers, and the overflow arrangement from the water sealed basins, shown in Fig. 4, as well as the disposal of the dirty washing water, never caused any trouble.

The average temperature of the clean gas for the first half year was 54.7 degrees, while the temperature of water supply was 53.3 degrees for the same period. For the second half of 1909 these temperatures were

67.4 and 66.7 degrees, respectively. The yearly average temperature of the clean gas was 61.1 degrees, while the yearly average temperature of the water supply was 60 degrees. The temperature of the waste water from scrubber No. 1 averaged 20 degrees higher than that of the fresh water, while that from wet scrubber No. 2 did not exceed the average supply temperature more than 1.7 degrees. The first wet scrubber removed the bulk of the dust, as indicated by the muddy, black

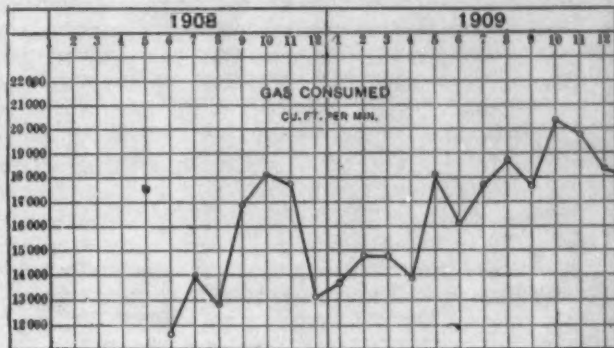


Fig. 9.—Gas Consumed (Monthly Averages).

appearance of the waste water, but a good share of the cleaning was done by the second scrubber, judging by the reddish-brown color of the water discharged. The cleansing efficiency of the wet scrubbers is given in Fig. 6. The average efficiency was nearly 80 per cent. during the first and 78.8 per cent. during the second half of 1909, while the average yearly efficiency reached 79.3 per cent.

Of greatest interest is the effect of wet cleaning on the amount of moisture in the gas (Fig. 7). While the quantity of water used at the wet scrubbers was considerable, averaging 82.8 gal. per 1000 cu. ft. of gas cleaned, the average amount of moisture in clean gas was only 6.62 grains per cubic foot, with a maximum of 13.243 grains in August and a minimum of 2.61 grains in April.

#### Performance of Secondary Cleaning Plant

The Theisen gas washer installation was very successful, both in mechanical operation and cleaning efficiency. Theisen washer No. 2 was opened in March, 1910, for its second examination after nearly 9300 operating hours. The accumulations of mud were very slight, as shown in Fig. 8. The washers can run continuously for months without being shut down, except for occasional cleaning of the motors. All smaller repairs on these washers, as well as on the whole gas cleaning plant, are made by the operators, and the expenditure for lubricants and other supplies is amazingly small.

The gas temperature at the Theisen washer inlet was practically water temperature, while the temperature of the gas delivered was on an average 2 degrees to 3 degrees higher, because the mechanical work consumed by the washers transformed into heat is partly imparted to the gas. On its way to and in the gas holder this heat is again radiated, so that the gas temperature at the engines practically equals that of the water supply.

The performance of the Theisen washer as a gas cleaner, considering the variety of conditions of furnace operation, was beyond reproach. Fig. 6 shows that the efficiency of the secondary cleaning plant averaged 98.1 per cent. This efficiency was exceedingly uniform, varying from a maximum of 99.1 per cent. in October to a minimum of 95 per cent. in December, 1909. The efficiency of refining was nearly a constant maximum, irrespective of the dust conditions of raw and clean gas and of the quality of the flue dust.

Since starting the plant the absolute amount of dust

in the fine gas increased gradually, corresponding to a similar increase in the amount of gas cleaned per minute, shown in Fig. 9. An excessive purification of blast furnace gas, even for engine purposes, is unwarranted, because the atmosphere in a steel plant is usually very dirty and seems out of place unless the combustion air is subjected to a similar cleaning process. A comparison of analyses shows the surprising fact that the amount of iron in a dust sample taken from the air

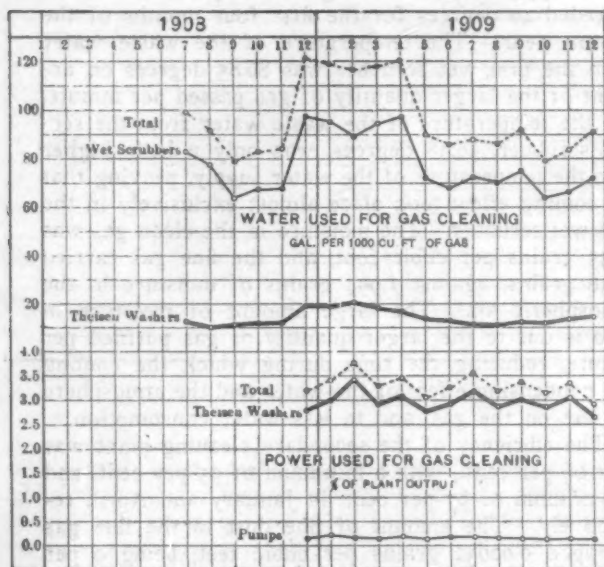


Fig. 10.—Water and Power Consumption of the Gas Cleaning Plant.

dampers of an engine is about twice as great as in the dust deposited on the gas dampers. It follows that appreciable quantities of iron, sand and coke enter the engines with the combustion air.

The amount of moisture remaining in clean gas, fine gas and air and the variation from month to month are shown in Fig. 7. While the Theisen washers receive the gas at practically water temperature, so that condensation is improbable, the amount of moisture in the engine gas is nevertheless lower than in the clean gas, in spite of the intimate contact between gas and washing water in the washers. Therefore the washers remove moisture as well as dust, probably by centrifugal force.

#### Water and Power Consumption of Cleaning Plant

Fig. 10 shows the average monthly consumption of water since July, 1908, in gallons per thousand cubic feet of gas cleaned, as established from daily weir measurements. It shows that the water consumption of the wet scrubbers is about four times as high as that of the Theisen washers, for the same quantity of gas cleaned. The latter varied from 26.1 gal. in February to 16 gal. in July, with an average of 21.8 gal. for the first and 17 gal. for the second half, and 19.4 gal. per 1000 cu. ft. of gas for the whole year. The corresponding figures for the wet scrubbers were a maximum of 103.2 gal. in April, and a minimum of 68.6 gal. in October, with an average of 91 gal. for the first half; 74.6 gal. for the second half and 82.8 gal. per 1000 cu. ft. for the year 1909.

Fig. 10 also shows the monthly average power consumption of wet scrubber pumps and Theisen washers in per cent. of the gas engines output. About 90 per cent. of the total power is being used by the Theisen washers, only 10 per cent. being necessary to operate the wet scrubber pumps. The average power consumption of the Theisen washers was 2.977 per cent. of the total output of the station, and the respective values for the first and second halves of 1909 were 3 and 2.931 per cent., with a maximum of 3.44 per cent. in February and a minimum of 2.649 per cent.

in December. These figures are somewhat higher than are often claimed for similar washers abroad, but should not be considered excessive in view of the benefit which is being derived from this expenditure. No difficulties which might have been caused by insufficiently cleaned gas were ever experienced in the operation of the engines, and they never had to be stopped for the specific purpose of cleaning internally the gas valves and gas passages. The amount of dust deposited on internal engine parts was invariably so small that it could be brushed off with the finger.

Blast furnace gas delivered to the power house is charged to operation of the engines at a value based on the price of coal with the cost of cleaning and refining added to the value of the raw gas, which is established on the basis of equivalent heat values. To determine the charge made for purified blast furnace gas delivered to the gas power plant, a continuous record is being kept of the quantity of gas blowing to the gas holder, Venturi meters being used as measuring instruments.

#### Thermal Efficiency and Output of Gas Engines

The thermal efficiency of the plant was very uniform from the middle of 1908 until about May, 1909, averaging 23.22 per cent. The drop which began in May and reached a low value in October, was due to troubles encountered with gas cylinders and piston rings, &c. These could not be remedied at that time, as it was impossible to shut the gas engines down sufficiently long for a thorough overhauling and for necessary repairs. Doubtless with an additional spare engine the load factor would have been lower than the average for 1909, which reached 72 per cent., but the thermal efficiency would have remained constant—or nearly so—since the necessary repairs, adjustments and changes could have been made on these engines in time, without reduction in the total kilowatt output of the power plant. In spite of this reduced efficiency in the second half of 1909, the average figure obtained for the whole year was 20.8 per cent., with a maximum monthly average of 23.77 per cent. in March, and a minimum of 17.8 per cent. in October. The highest

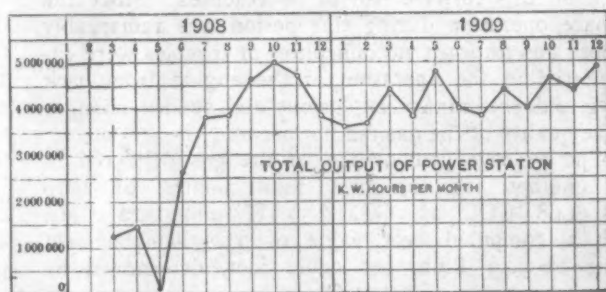


Fig. 11.—Total Output of Gas Power Plants (Monthly Averages).

daily average efficiency in 1909 was 25.7 per cent. on March 11.

During the year 1909 the engines, while in operation, ran at nearly full-load capacity, the average for the four engines ranging from 93.6 to 99.63 per cent. The values of the total kilowatt output for each month since regular operation was begun are plotted in Fig. 11, showing that the maximum for any month occurred in October, 1908, when 5,000,000 kw.-hr. was produced. The output for the year 1909 was 50,494,100 kw.-hr. against 43,953,640 kw.-hr. produced by the steam driven generators. The load factor for 1909 of the gas power plant was 72 per cent., against 47 per cent. for the steam power stations, which have a rated capacity of 10,900 kw. The total output of electric power generated in 1909 was 94,447,740 kw.-hr., 53.5 per cent. of which was produced by gas power.

#### Supplementary Notes

In closing the discussion of his paper the author



added the following facts covering the performance for the first four months of 1910:

In January the first gas blowing engine was started very successfully, and since then two more have been put in operation furnishing blast to three furnaces. One of these is blowing blast furnace No. 4 without the aid of steam blowing engines, delivering 40,000 cu. ft. of air per minute. The change of the arrangement of the preliminary gas cleaning plant, mentioned in the paper, was put into effect in May, and the results obtained by operating four wet scrubbers in parallel were very satisfactory. The quantity of power gas consumed has increased very materially; at present about 27,500 cu. ft. is being purified each minute, with four gas electric and three gas blowing engines in operation. The average quantity of gas cleaned per minute for the first four months of 1910 was 20,845 cu. ft., or about 25 per cent. more than the average for the year 1909 and 46 per cent. more than for 1908. Inasmuch as five blast furnaces have been in operation since the beginning of the year, and since gas blowing engines are supplying a large percentage of the blast to the furnaces, the gas supply has always been more than sufficient, the surplus gas being utilized at present to fire the boiler at the adjacent plate mill.

The average kilowatts produced by the gas power plant for the first four months of 1910 was 5663, corresponding to a load factor of 70.8 per cent. The average time of operation was 557 hours per month, or 77.5 per cent. of the total possible time. Repairs on the engine were responsible for 17.5 per cent., while operation of the plant caused 5 per cent. of the shutdowns. No time was lost for lack of gas. The raw blast furnace gas pressure averaged 10.6 in. of water, while the average gas pressure after the secondary washer was 14.9 in. At present, with furnace No. 1 out of blast and the plate mill boiler house receiving gas, the bulk of the gas for the engines is being furnished by furnace No. 3. This was most strikingly proved a few weeks ago, when for operating reasons the watering of the stock on this furnace was abandoned. The consequence was a tremendous increase in the amount of flue dust carried into the cleaning plant, and watering of the stock on this furnace had to be resumed. Since the furnace operation during this period was remarkably smooth and uniform, no difficulties or troubles were encountered in the operation of the engine from back firing and preliminary explosions and sudden changes in the quality of the gas did not occur.

The average composition of the gas delivered to the engines for the first four months of 1910 was 14.8 CO<sub>2</sub>, 25 CO, 3.59 H and 0.22 CH<sub>4</sub>, with a computed heat value of 93.15 and a heat value of 92.9 B.t.u. per cubic foot, determined by calorimeter. The ratio  $\frac{\text{CO}}{\text{CO}_2}$  was 1.69, or materially lower than for the corresponding period of 1909 with 2.1, indicating low coke consumption and a more rational operation of the furnaces. The average temperature of the gas entering the cleaning plant was 255 degrees, and 84 degrees before the wet scrubber. The reduction in temperature due to radiation through the unlined zigzag flue was, therefore, 67 per cent. in 1910, against 66.6 per cent. for the corresponding period of 1909, the average air temperature being 40 degrees.

With the low velocity of the gas through the pipes only small quantities of flue dust are being deposited in the dust legs of the zigzag flue and the gas delivered to the wet scrubbing plant is considerably dirtier than it was last year. For example, the amount of flue dust in dry cleaned gas averaged 1.8061 grains per cubic foot, with a minimum of 1.3979 grains in January and a maximum of 2.3361 grains in April. The wet scrubbers—only two of which were in series up to May, 1910—removed from the gas an average of 91.5 per cent. of the dust, delivering clean gas containing an average of 0.1488 grains per cubic foot, and this

high efficiency of the wet scrubbers is maintained at present with four scrubbers operating in parallel. Thus, with over 27,000 cu. ft. of gas cleaned per minute, the four wet scrubbers have removed in May, 1910, an average of 96.1 per cent. of the impurities received. The average temperature of the clean gas delivered to the Theisen washers was 52 degrees, the gas entering the gas holder at 50.55 degrees. These temperatures were lower than the temperature of 55.41 degrees of the water supply since the average air temperature had not exceeded 40 degrees for the first four months of the current year. The temperature of the waste water from the first wet scrubber was 86.85 degrees on account of the larger quantity of gas passed per minute, and the temperature of the waste water from the second scrubber, 56.38 degrees, was only a little higher than the temperature of the water supply, proving that the cooling effect took place almost exclusively in the first wet scrubber. The moisture in the clean gas was 4.735 grains per cubic foot, and the fine gas carried 3.658 grains, against 1.994 grains of moisture in the atmospheric air. The large amount of moisture in 1910 is due to the larger quantity of gas purified per minute, reducing the time during which the cooling and condensing effect of the water and the atmosphere can act on the gas, and to less water consumption.

The efficiency of the secondary cleaning plant was over 96 per cent., with a minimum of 95 per cent. and a maximum of 97 per cent. in January and April, respectively. The amount of flue dust in the flue gas averaged 0.00632 grains per cubic foot, being 9 per cent. higher than the average for the whole year of 1909, while the amount of gas cleaned per minute was 25 per cent. larger. It is to be noted that the overall efficiency of the wet scrubbing and secondary cleaning plants for this period was 99.6 per cent., so that only 0.4 of one per cent. of the amount of dust originally contained in the dry cleaned gas went to the engines.

The water used in the Theisen washers averaged 17.5 gal. per 1000 cu. ft. of gas cleaned, or about 2 gal. less than the average for the whole year 1909. A marked economy in the amount of water used in the wet scrubbers was realized, only 63.1 gal. of water being supplied per 1000 cu. ft. of gas cleaned. The reduction in the total water consumption amounted therefore to more than 20 per cent. compared with 1909, and a further reduction is being tried at present since it was found that with four wet scrubbers operating in parallel the clean gas is relatively cleaner than it was with series washing in two wet scrubbers. Unfortunately the power consumed and therefore the cost of cleaning per unit of gas will not be very much affected by such a reduction since the wet scrubber pumps do not use more than about 10 per cent. of the total amount of power consumed in the gas cleaning plant. The average power consumed for the first four months of 1910 was 0.308 per cent. for the wet scrubber pumps, 3.011 per cent. for the Theisen washers, the total being 3.319 per cent. of a total output.

The heat consumption of the gas electric station with an average load of 91.45 per cent. on the engines while in operation was 16,873 B.t.u. per kilowatt-hour, or at 96.2 per cent., greater efficiency 12,101 B.t.u. per brake horsepower hour, so that the average thermal efficiency at the shaft for the first four months was 21.1 per cent. The average for the individual months was 20.9 per cent., 21.9 per cent., 20.8 per cent. and 20.8 per cent., respectively.

While it has been impossible so far to determine the thermal efficiency of the various types of gas blowing engines recently installed, Venturi meter measurements of the total quantity of gas delivered to the gas holder indicate that the heat consumption of the three engines in operation averages about 12,000 B.t.u. per brake horsepower hour, these engines operating at about 70 per cent. of full load. The thermal efficiency of the plant is therefore about 21 per cent.

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The following quotations are for small lots. Wholesale prices, at which large lots only can be bought are given elsewhere in our weekly market report.

IRON AND STEEL— Bar Iron from store—		Genuine Iron Sheets— Galvanized.		METALS— Tin—	
Refined Iron.		Nos. 22 and 24 .....		Straits Pig.....	
1 to 1½ in. round and square.....		No. 26 .....		Lake Ingot.....	
1½ to 2 in. x ¼ to 1 in.....		No. 28 .....		Electrolytic.....	
1½ to 4 in. x ¼ to 1 in.....		No. 28 .....		Casting.....	
Rods—¼ and 11-16 round and square.....		Corrugated Roofing—		Copper—	
Angles.....		2½ in. corrugated.....		Western.....	
3 in. x ¼ in. and larger.....		No. 24.....		Spelter—	
3 in. x 3-16 in. and ¼ in.....		No. 26.....		Zinc.	
1½ to 2½ in. x ¼ in.....		No. 28.....		No. 9, base, casks.....	
1½ to 2½ in. x 3-16 in. and thicker.....		Tin Plates—		Lead.	
1 to 1¼ in. x 3-16 in.....		American Charcoal Plates (per box.)		American Pig.....	
1 to 1¼ in. x ¼ in.....		"A.A.A." Charcoal:		Bar.....	
1 to 1¼ in. x ¼ in.....		IC, 14 x 20.....		Solder.	
1 to 1¼ in. x ¼ in.....		IX, 14 x 20.....		½ & ¾, guaranteed.....	
1 to 1¼ in. x ¼ in.....		American Coke Plates—Bessemer—		No. 1.....	
1 to 1¼ in. x ¼ in.....		IC, 14 x 20.....		Refined.....	
1 to 1¼ in. x ¼ in.....		IX, 14 x 20.....		Prices of Solder indicated by private brand vary ac-	
1 to 1¼ in. x ¼ in.....		American Terne Plates—		cording to composition.	
1 to 1¼ in. x ¼ in.....		IC, 20 x 24 with an 8 lb. coating.....		Antimony—	
1 to 1¼ in. x ¼ in.....		IX, 20 x 24 with an 8 lb. coating.....		Cookson.....	
1 to 1¼ in. x ¼ in.....		Seamless Brass Tubes—		Halletts.....	
1 to 1¼ in. x ¼ in.....		List November 13, 1908.		Other Brands.....	
1 to 1¼ in. x ¼ in.....		Brass Tubes, Iron Pipe Sizes—		Bismuth—	
1 to 1¼ in. x ¼ in.....		List November 13, 1908.		Per lb.....	
1 to 1¼ in. x ¼ in.....		Copper Tubes—		Aluminum—	
1 to 1¼ in. x ¼ in.....		List November 13, 1908.		No. 1 Aluminum (guaranteed over 99% pure), in ingot	
1 to 1¼ in. x ¼ in.....		Braze Brass Tubes—		for remelting.....	
1 to 1¼ in. x ¼ in.....		List August 1, 1908.		Rods & Wire.....	
1 to 1¼ in. x ¼ in.....		High Brass Rods—		Sheets.....	
1 to 1¼ in. x ¼ in.....		List August 1, 1908.		Old Metals.	
1 to 1¼ in. x ¼ in.....		Roll and Sheet Brass—		Dealers' Purchasing Prices Paid in New York	
1 to 1¼ in. x ¼ in.....		List August 1, 1908.		Copper, Heavy cut and crucible.....	
1 to 1¼ in. x ¼ in.....		Brass Wire—		Copper, Heavy and Wire.....	
1 to 1¼ in. x ¼ in.....		List August 1, 1908.		Copper, Light and Bottoms.....	
1 to 1¼ in. x ¼ in.....		Copper Wire—		Brass, Heavy.....	
1 to 1¼ in. x ¼ in.....		Base Price.		Brass, Light.....	
1 to 1¼ in. x ¼ in.....		Carload lots mill 14½¢		Heavy Machine Composition.....	
1 to 1¼ in. x ¼ in.....		Copper Sheets—		Clean Brass Turnings.....	
1 to 1¼ in. x ¼ in.....		Sheet Copper Hot Rolled, 16-oz. quantity lots.....		Composition Turnings.....	
1 to 1¼ in. x ¼ in.....		Sheet Copper Cold Rolled, 16-oz. advance over Hot		Lead, Heavy.....	
1 to 1¼ in. x ¼ in.....		Rolled.....		Lead, Tea.....	
1 to 1¼ in. x ¼ in.....		Sheet Copper Polished 20 in. wide and under, 16		Zinc Scrap.....	
1 to 1¼ in. x ¼ in.....		square foot.....			
1 to 1¼ in. x ¼ in.....		Sheet Copper Polished over 20 in. wide, 20			
1 to 1¼ in. x ¼ in.....		square foot.....			
1 to 1¼ in. x ¼ in.....		Polished Copper, 16			
1 to 1¼ in. x ¼ in.....		square foot more than Polished			

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